

Journal of the United Service Institution of India.

11032

Vol. XXXIV—1905.

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The Journal

OF THE

United Service Institution of India.

VOL. XXXIV.

JANUARY 1905.

No. 158.

"THE INFLUENCE AND APPLICATION OF SEA POWER ON EXPEDITIONS BASED ON INDIA."

BY MAJOR F. G. CARDEW, 10TH LANCERS.

*Motto :—" He that commands the sea is at great liberty."
(Essay adjudged third in the " Gold Medal Competition.")*

Introductory.

The essayist, who selects his own subject, assigns to it such a title as seems best to indicate its nature, and adheres in his work as closely as may be to the line of thought which he has chosen, holds an initial advantage of some value over one who endeavours to write on a theme laid down for him by another, especially if the topic to be discussed is complex, and approachable from varying points of view. Thus in the subject of the present essay an element of doubt is involved in the expression "expeditions based on India." Is it the intention that consideration should be directed mainly to over-sea expeditions, based (with certain limitations) upon India for reinforcements of men, and replacement of supplies? Or should greater prominence be given to operations beyond the land frontiers of India, which find in this country not only their strategical base for the supply of material and personnel, but also the immediate base of military operations? The influence of sea-power upon the first is more evident, both as regards the initial execution of such an undertaking and as

regards the subsequent operations; for the sea will furnish the line of communication throughout, and its possession must therefore remain of vital importance to the force in field. But in the second case also the command of the sea and the security of transit which it affords is no less essential. India can never be anything but a secondary base of operations for the British; our power in this country can never be entirely self-contained or self-supporting, and our army must always look ultimately, both for reinforcements and for munitions of war, to its final base in the British islands, or to such portions of Greater Britain as may be conveniently situated and competent to furnish the necessary aid. Thus it is plain that our whole existence in India is based and dependent upon sea-power and that it is this power alone which makes operations possible for us whether they be over sea or beyond our land frontiers; indeed it may be added that the latter case, involving as it would the employment of far larger forces than in any over-sea expedition, would emphasize even more speedily than in the smaller operations how powerless we should be unless secure in the possession of that freedom of transit which, as has been said above, sea-power alone can give.

Both these points of view therefore require to be considered in dealing with the present subject, and its discussion thus falls naturally into two parts; first, the direct relation between sea-power and over-sea expeditions based upon India, and, second, the more general relation between sea-power and all considerable military operations, whether by land or sea, having India as their base.

The influence of sea-power upon over-sea expeditions from India.

It has become a truism (though often overlooked in so-called schemes of Imperial defence) that the first line of defence of the British Empire is the Navy. The system of defence, however, implied in this phrase will never be a passive one. It is an essential tradition of British naval strategy that the best defence against hostile forces is to seek them out and to take the first favourable opportunity of attacking them, or, if they cannot be induced to join action, to confine them to their ports by blockade. This will be in the future, as it has ever been in the past, the line of action adopted by the British fleets, and by such a course will they provide for the defence of the Empire on the outbreak of a great war. But it is well

known that the defensive pure and simple can never achieve success, and the principle applies even to the vigorous offensive of the British Navy. However successful our fleets may be in securing that command of the sea which is necessary to the continuance of the commercial life of the Empire, it would be impossible for us to rest content with such successes; nor could our subsequent operations be thereafter limited to a commerce war, which, though it would be injurious to our opponents, would in no case be likely to force a continental enemy to accept such terms of peace as we should be justified in expecting. Some more far-reaching offensive action than is possible by a naval force would be necessary on our part; and since it is admitted that we should not in the future attempt military operations on the continent of Europe, such action would naturally take the form of attacks on the colonies, coaling stations or other outlying dependencies of our antagonist. For an enter-

Favourable position of India for such expeditions.

prise of this sort the position of India is peculiarly favourable, both with regard to that of other British dependencies, whence support and assistance may be expected, and in view of the proximity of various vulnerable points in the possessions of possible enemies. History furnishes examples of such expeditions based upon India, of which the most apt illustrations of the points under consideration are the capture of Bourbon in 1810, of Mauritius in the same year, and of Java in 1811; the expeditions to Egypt in 1801 and 1882, to Abyssinia in 1868, to China in 1858, 1861 and 1900, and to Natal in 1899, will also occur to all readers. It is useless, however, to do more than name the later of these operations in the present connection; we were operating in those cases against foes who were not possessed of any sea-power, so that no question of hostilities arose until a landing had been effected in their country. Nor in view of the completeness of the supremacy established by the British at sea at the beginning of the nineteenth century is it quite safe to regard the earlier expeditions which have been named as examples of conditions likely to exist in a future war. Nevertheless the circumstances which gave occasion for these undertakings, and those which attended their execution, are not uninteresting, so that a brief account of each may be given here.

Throughout the wars of the French Revolutionary government and empire the consistent superiority of the British at sea resulted in the whole naval strength of the French being

Examples from British Indian history.

concentrated in their attempts to make head-way against their powerful antagonists in European waters, where the scene of the main struggle between the two powers was laid. No squadrons could be spared for distant operations in the east, or at least none of sufficient strength to dispute the supremacy of the British in the Indian Ocean; in these seas therefore the French were obliged to confine themselves to a *guerre de course* prosecuted against the rich trade of China and India, to the considerable damage of the latter and enrichment of the enemy. In this commerce war the principal head-quarters and rendezvous of the French cruisers was Mauritius (or as it was then called L'île de France) and the adjacent islands, the former of which was spoken of by a French writer half a century earlier as "The centre of all military operations, offensive or defensive.....in those regions.....what a misfortune for France should she suffer herself basely to be deprived of it!" For many years before any serious attempt was made to put a stop to these depredations or to seize the valuable islands which afforded the enemy so secure a base, it had been recognized that action of the sort was necessary; but the British in India during the last decade of the eighteenth century were in no position to undertake considerable operations against foreign foes; nor was it until the overthrow of Tippu Sultan in 1799 that our power in this country was sufficiently consolidated to admit of such action being contemplated. As soon, however, as the termination of the war in the Carnatic removed all immediate danger in India, Lord Wellesley, then Governor-General, was not slow to turn his attention to the extension and further establishment of British supremacy in the east. The choice of operations which lay before him is worth noting since it well illustrates the three several methods in which over-sea operations from an outlying dependency such as India may be applied. At this time a British Expeditionary force in Egypt was endeavouring to reduce to surrender the French army which Napoleon had transported to that country in defiance of prudence and of all laws of naval strategy, and had then deserted to its fate, without a chance of reinforcements or succour. Here then was an opportunity for a force from India to co-operate with Sir Ralph Abercromby and thus to afford material assistance in the main operations of his British army. Secondly, there was the need for vigorous action against Mauritius and Bourbon, with the object at once of adding these important islands to the British

* See Thornton's History of the British Empire in India, Volume IV, page 162.

possessions and of putting a stop to the constant depredations of French cruisers, so injurious to our trade. Thirdly, the prosperous Dutch settlement of Java would certainly be an easy prey to an expeditionary force and would be a very valuable acquisition to the British, while its capture would deal a severe blow at Dutch commerce in the east. With the choice of these three courses before him, the action taken by the Governor-General was to write to England offering co-operation in Egypt, and at the same time to collect a force at Trincomalee which, in the event of his offer not being accepted by the Home Government, he proposed to employ against Mauritius. In the latter intention he was frustrated by the action of Admiral Rainier, commanding the squadron in Indian waters, who according to Thornton refused to allow his ships to take part in the proposed operations except with the assent of the king, an avoidance of responsibility such as is not often to be found in officers of the Royal Navy. Lord Wellesley thereupon planned an attack on Java, an enterprise for which he actually had the king's authority, but the acceptance of his offer of assistance in Egypt finally settled the destination of the expeditionary force which had been pre-

pared, and caused the indefinite postponement of all other projects. The Expedition to Egypt, 1801. The force at Trincomalee sailed to Bombay, where it was increased by additional troops up to a strength of over 5,000 men, and under the command of Major-General David Baird the whole left India in February 1801. No military opposition was encountered, but the expedition suffered much from contrary winds and bad weather, so much so that after the loss of two transports the attempt to reach Suez was abandoned, and the force landed at Kosseir in May and June. The subsequent movements of the expedition need not be detailed; it will suffice to mention that it reached Alexandria too late to take any part in the operations against the French, who, both at Cairo and Alexandria, capitulated shortly before General Baird's arrival.

The imminence of war with the Mahrattas and the actual outbreak of that great struggle prevented Lord Wellesley, during the remaining years of his administration, from carrying out his intention of attacking the French strongholds of Bourbon and Mauritius, nor was it until 1809, when Lord Minto was Governor-General, that affairs in India were again sufficiently settled to allow of these necessary operations being undertaken. Meanwhile the depredations of the French cruisers

Operations against the French islands, 1809-10.

on our Eastern trade had for some years past constantly increased and had become so serious that (according to Low in his history of the Indian Navy) in 1807 the loss to Calcutta shipping alone was reckoned at more than £300,000. The first step in the direction of reprisals was the seizure in 1809 of the small island of Rodriguez, situated in the Indian Ocean due east of Mauritius. This was effected by a naval squadron under Commodore Rowley, and a small military force from India under Colonel Keatinge of the 56th Foot. Even after this preliminary move, however, further operations against Bourbon and Mauritius were postponed so long, and prepared with such an elaboration of strength, as can only be explained by the statement of Thornton that for many years the popular belief had been current that Mauritius was impregnable, that the difficulties of effecting a landing did not admit of invasion except by way of the harbours, and that all of these were so strongly fortified as to be almost unassailable. We cannot perhaps criticize severely the want of accurate information in these matters prior to actual trial of the strength of the enemy, but it is remarkable that, even after the common view had been shown by practical results to be erroneous, it was still considered necessary to prepare an invading force of such magnitude as that employed in the final operations. The test of the French strength which is alluded to was made in September 1809 when a detachment only 600 strong from the troops at Rodriguez made a raiding attack on Bourbon, seized the important town of St. Paul, captured the shipping there, and compelled the French force sent against them from St. Denis, the capital of the island, to retire. A year later, in July 1810, the attack on Bourbon was renewed in sufficient force to admit of the island being permanently occupied. Three thousand six hundred men from the force at Rodriguez, strengthened by drafts from India, were employed in this enterprise, and they induced the French garrison to surrender after only 24 hours' operations and with the loss to the British of only 18 killed and 79 wounded. These easily won successes should have shown (it may be thought) that the task of reducing Mauritius to submission would not be so arduous as had been commonly supposed, and although the occupation of Bourbon was shortly followed by a somewhat serious reverse to the British squadron in those waters, by which four frigates were captured in an attempt to attack the French ships in the harbour of Port Sud-Est; yet this misadventure was due to the lack of judgment of the British commander rather than to the strength of the French, and in no

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respect did it indicate the necessity for the employment of very considerable force in the approaching operations.

However, the preparations for the attack on Mauritius were now complete. Detachments from Bengal, Madras, Bombay, and the Cape were to rendezvous at Rodriguez in November, but the troops from the Cape were delayed, and the expedition eventually sailed from Rodriguez without them. The military force consisted of 10,000 men under Major-General John Abercromby, and was conveyed in about fifty transports; the naval escort comprised nineteen sail, one of which was a 74-gun ship, and twelve others were frigates carrying from thirty-two to forty-four guns. The French naval force was only five frigates. The expedition left Rodriguez in the last week of November and effected a landing without opposition at La Grande Baie on November 30th. Port Louis, the capital, was reached after a trying march across the island. There the defences of the town on the land side were found to be insignificant (a weakness which is common in the defences of sea ports); the French garrison, which consisted of only 1,300 regular troops and some 10,000 local militia of no practical value, made but slight resistance, and capitulated on December 3rd; and Mauritius was added to the British Empire with a loss of only 29 killed, 99 wounded, and 45 missing.

The expedition against Java, which was undertaken by Lord Minto in the following year, was on a still larger scale. It consisted of close on 12,000 troops, of whom rather more than half were natives, and was commanded by Major-General Sir Samuel Auchmuty. The troops were conveyed in fifty-seven transports, and the expedition was escorted by a fleet of more than thirty sail, including two ships of the line carrying 74 guns each, one of 64 guns, one frigate of 44 guns, fourteen frigates carrying from 32 to 38 guns, seven sloops, and eight cruisers of the Indian Navy. It is difficult to understand why so large a naval force was considered necessary, for it does not appear that the enemy were believed to have any considerable maritime strength in Java, and certainly none was encountered. The expedition sailed from India in April 1811, and concentrated at Malacca on the 1st June, where it was joined by Lord Minto, the Governor-General, in person. Beyond being overtaken by some bad weather no difficulties were experienced, and on the 4th-6th August the military force was disembarked on the coast of Java, 10 miles from Batavia. The operations which followed were purely military. The

Expedition to Java, 1811.

Dutch and French forces are said to have amounted to 13,000 men, but it is pretty certain that a large proportion of these were local troops, and although the resistance offered was more resolute than that experienced in Mauritius a year before, yet the issue was never in doubt. The island of Java was surrendered on the 17th September with the result that (as Lord Minto observed in his despatch) the British had "neither an enemy nor a rival left from the Cape of Good Hope to Cape Horn."

It will at once be observed that the chief characteristic of the foregoing over-sea operations was the complete immunity from any danger of attack by hostile squadrons which was enjoyed by the assailants. It is true that in 1801 the French still possessed a few cruisers, which found a base and an asylum when necessary at Bourbon and Mauritius, their strength was only sufficient to maintain the *guerre de course* for which they were intended, and they certainly did not constitute a danger to the transports which in that year sailed from Bombay with ample escort to the Red Sea. Still less could these cruisers offer any opposition to the considerable force which attacked Mauritius in 1810, while, as has been seen, when the expedition to Java left the shores of India in 1811, the last remnant of French naval strength in Eastern waters had been destroyed. Thanks therefore to the great naval strength of England which gradually increased through the wars of the 18th century, and reached its climax of complete supremacy at Trafalgar, the sea was in these operations, for all practical purposes, commanded almost as completely as when in latter years expeditions were sent to China, Egypt, and South Africa; yet even the slight element of danger which existed was sufficient to lead to the employment of naval contingents of no small importance. How much greater would be the naval strength required for the protection of an invading force if the power of the enemy by sea were still unbroken!

This reflection, and the details of the operations which have been described above serve to emphasize the first axiom that we would lay down: supremacy at sea is essential before attacks on territory from the sea can be even attempted. Unless our control over the sea is as complete, or nearly so, as when Lord Minto despatched his expedition against Mauritius, it will be out of the question for any serious attempt ever to be made over sea from India against the possessions of an enemy. Instances may be found, and many of

Command of the sea, a necessary preliminary to over-sea operations.

them, of expeditions which have been undertaken across what Admiral Colomb terms a "doubtfully commanded sea." That writer has examined in great detail the various gradations between assured and doubtful command of the sea, and he has adduced examples at every stage, of attacks on territory from the sea, some of them successful, some the reverse. But useful as such an examination of historical precedents undoubtedly is to the military student, the assertion cannot be confuted that no serious effort over sea against foreign territory would be made in the future except with assured security of military transit. Even the remarkable instance of the China-Japanese war when Japan transported large forces to the Korea without making any attempt first to destroy or blockade the Chinese fleet, numerically superior to her own, does not shake the unalterable truth of this rule. For the very fact that the Chinese, though with superior force, made no effort themselves to seek out the Japanese naval strength, and to bring it to action was sufficient indication that the practical value of the former was so small as to be a negligible quantity. It is true that the Japanese transports sailed from the Korea before it was known that the Chinese fleet would adopt a rôle of such helpless impotence, but the condition of the latter forces was well known to their assailants, who correctly judged that, although they violated the letter of a primary rule of war, they took no undue risk by so doing, since the spirit of the rule was observed. To return, however, to the hypothetical expedition from India, it must be remembered that there is no question here of a predatory raid by a few cruisers, for which a temporary or local command of the sea, or even a successful evasion of the enemy's naval force would suffice; the matter under discussion is an organized invasion, conquest and permanent occupation, with the double object of injuring the hostile power by the destruction of his commerce, and of removing his facilities for interfering with our own trading vessels. For a venture of this sort sea supremacy must be first attained.

A consideration of the details and magnitude of such an undertaking will easily show how well founded is this assertion. We must premise that an expedition starting from the shores of India would naturally be transported in such shipping as is ready to hand in Indian ports; this is not composed of ocean liners, each of which will accommodate three thousand men or more, but such vessels as those of the British India Company's fleet, ranging from three thousand to five thousand

five hundred tons, or ships such as those of the Peninsular and Oriental Company, the Sardinia, Sicilia and others, of about seven thousand tons, which have lately been built with a special view to their use as transports. These vessels cannot carry on an average more than a battalion of infantry, with perhaps half a field hospital, or a single squadron of cavalry. In order to show how large a fleet of such ships is necessary for a force of very moderate dimension it may here be stated that for the Indian contingent which was shipped to South Africa in 1899 and which was composed of 5,900 fighting men, 1,570 followers, 2,550 horses, 1,055 ponies and baggage animals and 20 guns, twenty-five vessels were chartered aggregating 82,455 gross tonnage. It may be objected that small vessels were specially chosen on that occasion in order that they might be able to get over the bar at Durban, but the China expedition of 1900 is in every respect a fair example of what can be done in this way from India, and in that case seventy vessels were employed aggregating 283,225 gross tonnage, or an average of 3,933 tons each, to convey a force of 20,000 fighting men, 17,377 followers and porters, 3,666 horses, 6,065 transport animals and 18 guns. It will readily be conceived that to convey across a sea, the supremacy of which is not assured, and to protect effectually from hostile attack so large a number of ships as is mentioned above, would be a task for which ships of war would certainly not be available in Indian waters; or if available they would only be so because they had been wrongly diverted from their proper duty of seeking out the enemy's fleet and bringing it to decisive action. Still less could such an expedition be launched on to a "doubtfully commanded sea" without adequate protection; the risk would be too great, the consequence of mishap too disastrous to admit of such a hazard; a Napoleon may stake such chances when playing for the empire of the East, but no modern Government would accept a responsibility so tremendous.

Nor will it by any means suffice if the sea supremacy, however complete for the moment, be only temporary. It would never happen that a force having secured a footing on hostile territory would thereupon become independent of supports and reinforcements, or would be able to draw all necessary supplies from the conquered country. It is conceivable that so far as food supplies are concerned this might be the case in some possible theatres of operations in

Supremacy at sea equally necessary in subsequent operations.

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eastern waters, but exceptions will not often be found to the general rule that a force in the field is dependent for its existence on its lines of communications, which, in the case now under consideration, lie across the sea. It is perhaps hardly necessary to quote instances to prove a fact so universally recognized, nevertheless, if an example be needed none better can be found than that, to which allusion has already been made, of the French in Egypt in 1798. Napoleon's daring confidence in his own good fortune led him successfully to launch his great expedition across a sea not, indeed, doubtfully commanded, because he possessed no sort of command over it at all, and only succeeded in effecting the passage by evading the vigilance of his enemies; but the eventual disaster and surrender were inevitable from the moment when his Navy was destroyed in the battle of the Nile, and his communications with his base were thus irreparably severed. Or if an Indian instance of the same general rule is required, it is only necessary to quote the final decay of the French power in this country immediately after the close of the Homeric struggle between Hughes and Suffren which left the British almost undisputed masters of the communications with Europe.

To enumerate only the main headings of the requirements of a force in the field is sufficient to show how impossible would be the task of protecting and keeping open

the lines of communications in the face of any serious opposition. Besides food, which as has been said may to a large

From the appendices to the report
of the War Commission

SENT TO SOUTH AFRICA DURING THE
WAR.*Clothing.*

Boots and shoes	...	508,000 pairs.
Breeches and trowsers	...	644,000 "
Frocks	...	621,000
Cloaks and great coats	...	148,000
Helmets	...	203,000
Jerseys	...	232,000
Shirts	...	449,000
Socks	...	1,022,000 pairs.

Equipment, etc.

Blankets	...	466,000
Water-bottles	...	298,000

extent be obtained from the country occupied, it needs ammunition, clothing, ordnance stores, medicines and other hospital stores, horses, baggage animals and forage for the same, and above all reinforcements of men to maintain its fighting strength. The theatre of operations may sometimes supply one or two of those necessities and obviate their shipment from India, but on the whole an expeditionary force must be dependent for everything on its base. It is perhaps hardly fair in this connection to quote the South African war and the im-

Waterproof sheets ...	303,000
Set of harness ...	46,000
„ saddlery ...	23,000
„ line gear ...	230,000

Ammunition.

Small arm (expended)	65,000,000
Gun „	427,638
Horses (purchased) ...	518,794
Mules „	150,781

mense quantities of supplies of all sorts which were shipped to that country for the use of the army seeing that the numbers employed were so greatly in excess of any expeditionary force which could be despatched over sea from India ; nevertheless the figures in the margin may be given for

what they are worth and in order to convey an idea of the ceaseless stream of supply ships which must constantly pass to and fro between a force operating in a foreign country and its base.

It is to secure the safe passage of these supplies and reinforcements that the command of the sea, the attainment of which must prepare the way for an over-sea expedition, must also be maintained and consolidated ; by no less permanent measures, by no system of convoys or escorts can this object be achieved, even if it would be possible to spare sufficient naval force for such a duty. And it may be added that in many cases the establishment of the expedition in successful occupation of the enemy's territory would itself be a sufficient guarantee of completeness of the command of the sea attained ; indeed it would often be with the primary object of establishing that complete sea supremacy which alone can admit of the unrestricted circulation of commerce in time of war, that the expedition would be undertaken. So it was when Bourbon, Mauritius and Java were attacked in the past, and so it will probably be in the future ; a military attack upon and occupation of the harbours which have given shelter to the enemy's cruisers will complete the work begun in a fleet action by the navy.

Having thus determined the conditions under which a maritime expedition may with reasonable prospect of success be despatched from these shores, it will be useful now

Facilities in India for preparation of an over-sea expedition.

to consider what special facilities exist in India for the equipment and transport of such an enterprise. When Lord Wolseley discussed with Lord Lansdowne in the summer of 1899 the advisability of sending reinforcements to the Cape the then Commander-in-Chief opposed the wish of the Secretary of State to obtain the requisite troops from India with the assertion (amongst others) that even if an Indian contingent were detailed for this service, it could not reach South Africa as quickly as could a force sent from England because the ships for its

conveyance would have to be sent from Great Britain. On what information Lord Wolseley based so surprising a statement does not appear. The event furnished a sufficiently striking answer to his doubts, and as has been already shown, in the following year an example still more remarkable of the facilities existing in this country for the rapid transport of over-sea expeditions was afforded in the despatch of the force for operations in China. Lest, however, it may be thought that these instances were the result of special efforts, the question of the strength of the British mercantile marine in Indian waters is worthy of further elaboration. In the year 1902-03 the number of British steam vessels which cleared from Indian ports (excluding the coasting trade) was 2,119 having a tonnage of 4,325,667 tons. The number of vessels employed in the coasting trade is not ascertainable, but it may be stated that the number of clearances of British steam ships for Indian ports in the interportal traffic during the year 1902-03 was 9,200 amounting to 10,780,000 tons; even when every allowance has been made for the considerable reduplication and exaggeration in these figures, they nevertheless serve to show how large is the volume of seaborne trade to and from Indian ports, and how far the resources in respect of shipping exceed any possible demands which could ever be made for military transport. The question of the time required for taking up freight and fitting the vessels is of minor importance, since—as has been shown—no expedition could leave these shores till the command of the sea had been secured, and in the meantime there would be ample opportunity for preparations. Moreover in 1899 and 1900 the Marine authorities were hampered, and the embarkation of the troops was threatened with delay by the fact that at certain seasons of the year there are few vessels in port, and all of those which come in are loaded up with cargo; this element of delay would be absent in the event of an expedition being sent from India during a war between Great Britain and another maritime power; for in the earlier stages of such a struggle the movements of trading vessels would be checked if not stopped, and the ports would be filled with shipping, waiting till such time as freedom of transit should be secured. It would indeed, as has been seen already, be largely in order to assure this freedom of movements of our commerce that the hypothetical expedition which is under discussion would probably be prepared. It will not, however, be without interest to state that in 1899 the Government of India received a definite request for troops for South Africa from Her Majesty's

Government on September 9th, that the first units to start embarked on September 17th, and that practically the whole contingent had left India by September 25th. In 1900 the first orders for the despatch of troops to China issued on the 18th of June, and the first unit started from Calcutta on June 26th; the completion of the despatch of the expedition was prolonged owing to changes in the original orders by which the strength of expeditionary force was increased.

Here then, and in the possibility of much larger movements which is furnished by the size and capacity of the British seaborne trade in India, is a striking proof of sea power. Could any other nation in the world provide sea transport at a few weeks' notice for some forty thousand men and ten thousand animals, not from the shores of the mother country but from the ports of a distant dependency, and that too without dislocating or disturbing the ordinary carrying trade of the locality?

This leads to the consideration of another aspect of the question. The essential conditions necessary for the undertaking of maritime expeditions have been stated, the special facilities for such expeditions from India have been discussed. It is now relevant to enquire to what extent the action of our enemies may be influenced by sea power; how far they may be able to dispute with us the possession of supremacy over the sea in the East; and whether they may even be able to attempt against our outlying possessions an attack from the sea, such as has been suggested as likely to be made by us from India. It would serve no useful purpose to discuss the normal strengths of our own and foreign navies in Eastern waters. Any conclusions based on such calculations would be vitiated by the fact that in the few weeks preceding a great war the usual numbers would certainly be altered according to the exigencies of the situation, just as we have seen the naval strength of Russia in the Far East materially modified during the last few months in view of the strained relations between the power and Japan. It must suffice for us to rest assured that any combination of naval force which we should be likely to meet would certainly be opposed by a British fleet of strength sufficient to admit of the latter assuming at once that offensive rôle which is the essential and traditional characteristic of British naval strategy. How long the hostile fleet would be able to keep the sea, how long, that is to say, it would remain (to use a hackneyed expression) "a fleet in being", would of course depend upon the measure of success attending our arms.

Circumstances might lead to a reverse in these distant waters, but we must regard such a contingency as only a temporary postponement of the time when we shall secure the supremacy of the sea both here and elsewhere, for the possibility of general and widespread reverses must not be contemplated at all; this would mean that the British Empire would be thrown back upon a line of passive defence to await the attack of her foes, and as Raleigh wrote three hundred years ago: "If once we be driven to the defensive, farewell might".

During any period of temporary ascendancy then, could an enemy organize an over-sea attack upon British possessions in the East? The answer to this question is that at such a time raiding attacks would be very possible, perhaps on Bombay, Trincomalee or Madras, still more likely on Hong-Kong, but any attempt at organised invasion is highly improbable. However severe the supposed reverse to our naval strength might be, it would be local and temporary only. Our adversaries would not secure such a permanent and complete supremacy as would lead them to attempt the transport of a

Total amount of steam shipping owned by nations concerned in Eastern politics. (From Lloyd's Register for 1902-03.)

	Vessels
Great Britain and Colonies...	8,352
Chinese ...	44
Dutch ...	320
French ...	690
German ...	1,365
Japanese ...	535
Russian ...	544

considerable military force to invade and if possible to conquer permanently any of our eastern possessions. Moreover in any case the fact remains that no foreign power has the merchant shipping ready to hand for such an enterprise, as is shown by the statement in margin. It is true that with the possession of the local command of the sea they might seize British ships for the purpose, and collect all available vessels of their own or their allies; but these expedients would take time, and meanwhile the opportunity would pass, and the reappearance of a British fleet ready to resume the offensive would dispel all possibility of

Inherent strength of British sea-power.

such an enterprise. Here again is an instance of the far-reaching effects of true and permanent sea power based not so much upon a fighting navy, which can be created to order by the expenditure of a given sum of money in a given number of years, but upon a great mercantile marine, which can only be accumulated gradually and is the result of the development of centuries. That which would be almost impossible for another nation to attempt, except after elaborate preparations requiring time and opportunity, would be for the British in India a matter easy of accomplishment, necessitating only a

few days' delay and involving hardly any exceptional effort. It is one of the principal arguments of the opponents of a preferential tariff system for the British Empire that, however greatly the commerce of other nations may have increased of late years as compared with the advance of British trade, no comparative statistics showing exports and imports give any idea of the wealth-producing operations of Great Britain, because they do not show the enormous profits resulting from our large share—until lately amounting almost to a monopoly—of the carrying trade of the world. This is true, so far as it goes, but a recent writer* has shown how rapidly the competition with us in this respect is growing, and it will be well if, in the strife over free imports or protection, the vital importance to the Empire of preserving undiminished our carrying trade, in other words the essence of our sea-power, be not overlooked.

This closes the first main division of the subject. It has been shown that the limitations of the British power lead her in war to find her opportunities for offensive action in attacks on distant dependencies of her enemies, and that the geographical position of India causes this country to be peculiarly suitable as a base for such attacks. On the other hand it has been explained that certain preliminary conditions are essential before an over-sea expedition can be undertaken. The special facilities which exist in India for the execution of an enterprise of the sort have been examined, as well as the chances in favour of successful opposition on the part of our enemies, and the disabilities under which the latter labour in any attempt at reprisals. The conclusion arrived at is that, just as we exist in India by virtue of sea power, so the same power not only influences but it is the very essence of hostilities over-sea from India; and not only to India does the principle apply but also to the mother country and to every dependency of the British Empire; with the possession of naval supremacy we are secure in our defence and fully prepared to strike (provided always that we have the weapons of offence); without that possession we are powerless and at the mercy of our enemies. It is time now to turn to the consideration of the influence of sea-power on Indian expeditions other than those over-sea.

The influence of sea-power upon military operations beyond the Land Frontier of India.

Captain Mahan writes in one of his books: "Communications dominate war". This salient fact may be taken as the leading idea

Dependence of India upon over-sea communications.

* Cf. Mahan, "The Naval Defence."

of this part of the present essay. To such extent as an army in the field beyond our land frontiers can rely upon India for reinforcements in men, and for supplies of transport, war material and food, by so much is it uninfluenced by any considerations as to the command of the sea. Directly, however, the limit of India's resources is reached, and supplies or reinforcements have to come over-sea, from that moment the power of the sea makes itself felt, the security or otherwise of the lines of communication which stretch across the sea dominates the progress and determines the issue of the war. It is almost superfluous once more to cite the struggle between the English and French in India as an instance of the hopelessness of a case in which supplies and reinforcements needed for the existence of a force, and both are cut off by the intervention of a hostile sea-power. Conditions have changed much since the great contest in the Carnatic for the empire of India, but the essential principles remain and cannot be altered. The development by private enterprise and by the state of many sorts of manufactures and industries, the maintenance of reserves of material in well considered proportions, the improvement of the fighting value of the native army by anxious attention to the recruitment of suitable classes and by the efficient training of the troops for war, all of these measures have combined of late years to produce in India a condition of self-reliance which so recently as twenty years ago would have seemed impossible; but it must not be forgotten that the requirements of modern war as regards men, animals, and material have increased enormously, if not in the same period, at least during the last half century. The strides made by science, the facilities in providing what would formerly have been thought luxuries even in cantonment life in India, the amenities which have been introduced generally into a soldier's life, and finally (but not least) the increased opportunities of communication, of transmitting news and (it may be added) criticism, have all had their influence in increasing the number and variety of accessories which are now considered indispensable to an army in the field. Our men and officers are no longer housed in huge tents, nor is our army accompanied by hordes of camp followers, sutlers and hangers-on of every description, exceeding in number the strength of the fighting force; but on the other hand the scales of field clothing and of food for British and Native troops, and above all for native followers

are much more costly and elaborate than of old; the equipment of a field hospital is far in advance of that of a first class hospital in cantonments forty years ago; even the arrangements for the care, feeding and hospital treatment of transport animals are on a scale undreamt of formerly. The whole of these improvements have their uses. The need for mobility in modern war is such that everything unnecessary is discarded, and no impedimenta are retained but those which can justify their existence by contributing to the superior efficiency and endurance of the fighting machine. Nevertheless the greater the complexity of the needs of an army, the greater its dependence upon the base whence they come, and (as a corollary with reference to the subject now under consideration) the sooner is the limit reached when the secondary base in India requires replenishment from the ultimate or primary bases across the sea. In other words, the sooner does the moment arrive when the influence of sea-power makes itself felt.

It is worth while pausing here to consider in some detail Measure of India's self-dependence. to what extent India can, without assistance, supply the requirements of an army in the field, since this will show how far the question of sea-power has no influence on an Indian campaign. It has been long the fashion to assume; Troops. as a matter of course, that the very first requirement of India if involved in a war with a great power on her borders, would be a considerable reinforcement of British troops. Thus, to cite instances which have occurred in the last twelve months, the writer of "The Problem of the Army" in the *Times* last year advocated the location of an army corps in South Africa, largely on account of the facility with which reinforcements could be shipped thence to India; in the similar War Office scheme, which will be fresh in everybody's memory the whole argument in support of the proposed charges on India for the maintenance of the South African garrison was based on the assumption that the men would be immediately needed in this country in case of a big war; and again there was a similar statement in Colonel May's book on "Imperial Defence" which attracted a good deal of attention last year: "We will proceed at once to the conclusion that the outbreak of a great war on the Indian frontier will call for reinforcements from England amounting to some 50,000 men". On what calculations this conclusion was based the writer did not state, nor did it ever

appear in the controversy about the War Office scheme why in that case also it was taken for granted that large reinforcements would be required by India immediately on the outbreak of war. The assertion certainly needs some proof before it can be accepted. The present strength of the British troops in India is approximately 70,000; that of the volunteers is 32,000. Of course the strength which could be put into the field (and consequently the need or not of British reinforcements) depends entirely upon what may be considered a safe minimum to leave for garrison work in India. In view of the conditions of modern India, the strength of the volunteer force, and the excellent feeling which exists in the native army, it can hardly be contended that as an extreme maximum, more than 28,000 regular British troops would be necessary, thus leaving 42,000 for the field army. The proportion between British and native troops in the field army may be taken at one to two, so that it would be possible to place in the field a total force of 125,000 men. Not only would this number suffice for the requirements of the opening months of a war, but it is also as large a force as could be fully equipped and mobilised in India within a reasonable time. Although therefore reinforcements of British or colonial troops if forthcoming would be welcome for various purposes, yet it cannot be said that at the outset of hostilities they would be so indispensable as has often been declared, or that in this respect we should be immediately dependent upon the command of the sea.

The supply of horses and baggage animals for an army of 125,000 men does not present such satisfactory aspects. The immediate require-

Horses.

ments in the matter of horses of all mounted troops, including mounted infantry, could doubtless be met without going outside India, but as soon as the army has taken the field the question of replacement of losses becomes prominent. Not that such enormous and continuous wastage of horse-flesh as occurred in South Africa need be anticipated in any other campaign provided that proper precautions are adopted; on the contrary the experience of Indian campaigns in which none but eastern, or acclimatized Australian, horses were used, shows that at any rate for the first year of field operations no very excessive proportion of casualties need be anticipated. But the whole question lies in that matter of having indigenous or acclimatized horses available. As to the supply of indigenous horses, it is

notorious that of late years even the native cavalry, with their comparatively light weights, have found it difficult to obtain sufficient country-bred remounts for their men, while the Army Remount Department has not succeeded in procuring more weight-carrying horses of Indian breeds than have sufficed to supply the needs of a few squadrons. The Commission on horse-breeding, which was assembled two years ago, put forward a series of proposals, the ultimate result of which, in the opinion of the members, would be the complete emancipation of India from her dependence upon Australia for army remounts. But the proposals involve considerable expenditure, and in a matter so full of uncertainties as horse-breeding, it is proper as well as natural that the authorities who are responsible for the expenditure of public money should wish to feel their way and see the results of tentative measures before committing themselves to the outlay entailed by the unreserved adoption of the recommendations of the Commission. On the other hand, another characteristic of horse breeding is that a good many years must elapse before results can be clearly seen. These two factors are likely therefore to postpone indefinitely the attainment of the end anticipated by the Commission, even supposing that their views as to the effect of their proposals were not somewhat Utopian. The measures for the improvement of horse-breeding which have already been adopted will no doubt affect an amelioration both in the quantity and quality of the supply of indigenous horses, but they will not go far towards meeting the demands of war. Nor can any increase be looked for in the available numbers of Arab horses, the only imported class which does not require acclimatizing; the Arab market will not expand, and indeed in the opinion of good authorities the supply of horses from Arabia is likely to decrease in the near future. We are brought therefore to this conclusion that after our army has once taken the field, it will be dependent for remounts upon importations other than Arabians, and although it has been said that no very large demand for replacements need be anticipated during the opening stages of a campaign, yet the necessity, when those demands do arise, of meeting them with *acclimatized* horses is the crux of the question. It means that from the very outset of hostilities we ought to be receiving constant consignments of horses from Australia, from Canada and from America to fill our remount depôts, there to be inured to the Indian climate by which means alone they will be able to endure for a reasonable period the strain of field service. Even if such supplies of horses be

received within two months of the declaration of war, they cannot have at the most more than seven or eight months before they will be drafted into the ranks. This is all too short when it is remembered that large numbers of them will come from the Southern to the Northern hemisphere, and that the whole natural working of their system will thus be interfered with, since they will arrive here at the beginning of winter, just as the approach of the summer in southern latitudes induces their coats to become thin, or *vice versa*. In short there is no disguising the fact that, as matters stand at present, the outbreak of a great war would find the Army of India immediately dependent upon the command of the sea for this essential item of its requirements.

In the matter of mountain battery (ordnance) mules, although the state of things at the moment is even worse, seeing that there are in the country hardly more than sufficient for mobilisation, and that for all future supplies we should have no nearer source than America, nevertheless the outlook for the future is more promising. It is only of recent years that very particular attention has been paid to the development in India of scientific mule-breeding; as was noted by the Horse-breeding Commission, there is no better pack mule in the world than those bred of indigenous Indian parentage; the results of greater care in breeding and rearing are already becoming apparent, and it may fairly be anticipated that at no distant date all, or nearly all, of the requirements of our mountain batteries even in war, or at least for a campaign of 18 months' duration, would be procurable in India. The demands for pack mules of an inferior class for baggage purposes would in a considerable war be so enormous that however great may be the development of mule-breeding in the course of the next few years, the indigenous supply will scarcely be able to meet the initial requirements; large numbers must be imported from abroad for the maintenance of army transport at an efficient strength. In this respect no less than in the matter of horses, we shall be dependent upon freedom of transit by sea. The mule however is more hardy than the horse and would not require so long to become acclimatized in India.

No other kinds of transport animals would be obtained from abroad. The supply of bullocks for draught purposes is practically unlimited; that of camels, if we can but succeed in obtaining the services of all which are within reach, is if not

unlimited at least likely to be sufficient for our needs. In any case the supply cannot be supplemented from any over-sea source.

The next subject of enquiry is the supply of guns, small arms ammunition, and ordnance material of all sorts. Only a very few years ago India was entirely dependent on the factories of England for almost all these things except gun and small arm ammunition, leather work and (to a limited extent) gun carriages. The last six or seven years have wrought considerable changes in this respect, and still further development is in progress. The establishment of a large cordite factory on the Nilgherries, the lyddite filling factory at Kirkee, the central gun-carriage factory at Jubbulpore, above all the perfecting of steel manufacture at Cossipore and the off-shoot of that factory and the new small arm factory at Ishapore, all of these institutions, the cost of which has figured largely in the military estimates of the last few years, will shortly place India in a position of practical independence in these important respects. It is not indeed suggested that the ordnance factories, as at present planned, could have an outturn sufficient to supply all the needs of a protracted campaign by a force of seven or eight divisions, but even without extension they could certainly provide for the equipment of such a force. To what extent they could meet its subsequent requirements only an expert can say; but a more important point is that a factory once established is capable of expansion with comparative ease, and it is unlikely that the limits now set to the capacity of the ordnance factories will be strictly maintained. In short in this respect the Indian army may reasonably expect, within a few years, to be at least as independent of over-sea assistance as it is in the matter of men. As regards harness, saddlery, and similar equipment of every sort India may be said to be independent, both by reason of the large outturn possible from the Government factory and in view of the extent to which that source of supply could be supplemented by the private factories of Messrs. Cooper, Allen and Co. and the North-West Tannery Company at Cawnpore, and Messrs. Pirbhoy and Co. in Bombay. The leather industry is one of the few which has been freely developed in India with the best possible results both to private interests and to the State.

The supply of clothing for the troops in the field is another very essential item for consideration. As matters stand at present the new service dress which has been adopted at home

has not been introduced into India and khaki drill remains the service uniform of the army here. It is to be hoped that this system will remain unchanged. Khaki drill is a material at once suitable for a subtropical climate and (if the uniform be made sufficiently loose to admit of warm under-clothes) equally useful in the cold of winter; no woollen fabric would be similarly adaptable to the extremes of climate on the north-western borders of India, and the adoption of alternative uniforms for different seasons is to be strongly deprecated. But there is another reason for the continued use of khaki drill which is more relevant to the present subject. It is true that at present the whole of the drill required for clothing army is obtained from England and from one firm, the reason being that the firm in question held the patent rights in the dye which, after many years of unsuccessful attempts, was alone found to be perfectly fast. The term of these patent rights has it is believed now expired or will shortly expire, and it can hardly be doubted but that a very few years will see khaki of fast dyes produced in India equally good as in Manchester. It is certain that we have here an industry which can and ought to be developed in India. For the present, however, as has been said the whole clothing of the army is dependent upon supplies from England, and we are only independent of over-sea replenishment to such extent as a reserve stock is maintained in the clothing factories. Apart from drill for uniform the principal clothing requirements are helmets, jerseys, putties, flannel shirts, socks, boots and blankets. The first of these if of the basket pattern, can be supplied in any numbers; so too with boots, which are already entirely Indian supply; nor in time of war need there be any difficulty in meeting the whole of the other demands by purchases from local manufacturers. There are certain drawbacks in the matter of texture and finish in articles made of Indian wool, and so long as this inferiority exists the private soldier (who has to pay for his shirt or his socks out of his own pocket) can hardly be asked in time of peace to take local goods at bigger prices than the cost of better made things from home; but when the army is in the field and the State undertakes the supply and cost of the whole of a soldier's clothing, the pattern and the source whence the articles are obtained will naturally be determined by the supplying department with reference only to the interests of the State. If then, as may be reasonably hoped, the supply of khaki for the uniform of the army also becomes at no distant

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date a local matter, the question of clothing reserves in all important essentials would cease to be dependent upon the arrival of shipments from England.

Medicines and medical equipment must not be overlooked in this review of our resources. It has been more than once stated recently that the Government of India propose to establish at Nasik or some other convenient centre a large drug factory, the outturn of which would be primarily for the use of the army. If the scheme is carried out it will furnish another and important step towards the attainment of the independence of India in the matter of necessary supplies. No country in the world is more rich in the raw materials required for the manufacture of drugs and there is no reason whatever why all essentials should not be made here, instead of our being, as we are at present, wholly dependent upon imported articles. If with the preparation of drugs be combined a cutlery department for the manufacture of surgical instruments and appliances, the measure will be still more complete and satisfactory. But, as in the case of clothing, we have meanwhile to depend entirely upon supplies from over-sea.

Medical supplies.

The question of food-supply, the most important of all after the provision of the men themselves, has been left to the last. In this connection the evidence before the War Commission of Colonel Sir W. D. Richardson, Director of Supplies during the first year of the South African war, is interesting reading. The picture which he presented was one of an army practically dependent for its daily food upon the regular arrival of ship-loads of frozen meat from New Zealand. Until the appearance of this evidence probably few persons, except those intimately acquainted with the local circumstances had any idea that such a state of things obtained in a country of the extent of South Africa and supporting a population for the most part engaged in agricultural pursuits. Here indeed was a striking instance of an army dependent upon the command of sea transit! But although the facts of the case are worthy of study, and should be borne in mind, they would not apply to any great extent to operations on the borders of India. Even if it were desired to supplement local supplies with refrigerated meat, it is certain that many difficulties would arise to obstruct such a measure. The high temperatures to be encountered at the ports of delivery in India,

Food-supplies.

and on the lines of communication thence to the frontier, and the great distances to be traversed, may be suggested among these difficulties; but greatest of all would be the very limited railway communication available when the frontier should be crossed; light railways would not be very suitable for such a traffic and it is certain that all their capacity would be urgently required for other purposes. But it is unlikely that any necessity so to supplement local supplies would arise, for it must be remembered that two-thirds of the army which would be put into the field from India would be composed of native troops who are not dependent upon a daily ration of meat. Sir W. D. Richardson proceeded in his evidence to describe the difficulties encountered in obtaining an adequate supply of tinned meat, on which every modern army must constantly rely in order to ensure its mobility. This is an item in respect of which we cannot but remain dependent upon supplies from abroad, and as in some other cases which have been instanced, the degree of our temporary emancipation from such dependence at any given moment must be decided by the amount of the stocks which are maintained as a reserve in India. Large quantities (comparatively speaking) are so maintained,* but the expenditure

*About 430,000 lbs. (See F. S. D. Code, Supply and Transport, paragraph 218.)

in war is heavy, and nothing less than at least a six months' supply, calculated on a liberal scale of issue for the whole of the British troops in the field army, will serve to put us on a level in this respect with our independence in other matters. In the case of many other forms of food-supplies, especially in the matter of condensed foods for use as emergency rations, and what are known as hospital comforts, such as wines, spirits, essences, preserved milk and the like, we must remain similarly dependent upon imported supplies, and (in times of emergency) upon the reserves stored in the country.

The main items of military requirements have thus been passed in review. It has been shown that while in the important matters of the principal food-supplies, of clothing and of medicines

Narrow limits of India's independence.

the Indian army either is, or may hope to be in the near future, independent of assistance from abroad, in the essential item of British troops it cannot do more than place a moderately large force in the field, and for reinforcements it must depend upon aid from other parts of the Empire; in the scarcely less essential respect of weapons and ammunition it can only hope

for a limited period of independence; as regards tinned and preserved foods it cannot be self-dependent for a longer period than the duration of the mobilisation reserves, and finally in the all-important requirement of horses and baggage mules there is no choice between the maintenance of a large reserve, a course so expensive as to be impracticable, and, as the only alternative, reliance upon freedom of sea transit from the very outset of hostilities in order to ensure efficiency.

How limited therefore, even after taking credit for all our local resources and improvements, is the amount of our self-reliance! How complete is our dependence upon the seas! It may be thought that the question of our supplies has in the foregoing pages been too much laboured, but indeed it does not appear on reflection that the points can be emphasized too clearly which bring us back to the one salient truth that upon the sea we depend for existence. Though always recognized in a general way, the fact is somewhat liable to be overlooked in discussions of strategical and political problems. Yet upon it depends the whole of our preparations for war, and upon it, still more, must depend the course of a campaign. It is sometimes argued that although the sea might be closed to the passage of British vessels, yet we should be able to obtain some relief by means of the employment of neutral ships for the carriage of supplies. But the anticipation is surely vain if applied to so extreme a case, for if any hostile combination against us were ever to attain such strength by sea as to be able entirely to stop the arrival in India of British vessels, it is inconceivable that our enemies would be so foolish as to nullify the effects of their ascendancy by allowing us to receive from other sources the succour essential to the maintenance of our power. Whatever may be urged as to the terms of the Declaration of Paris it is practically certain that, in the extremely unlikely event of these conditions being established, the hostile combination whose might had been sufficient to acquire such naval supremacy would assume to themselves the right to interpret the Declaration in the manner most favourable to their own interests. We should certainly do so ourselves in like case and the course would be justified by precedent as well as by reason for the argument that a belligerent nation may, by merely transferring its goods to neutral ships, thereby secure from search or seizure every sort of supplies except actual weapons and ammunition is, as Charles James Fox declared, "supported neither by the law of nations, nor by common sense".

On the other hand, in the much more probable circumstances of a partial interruption of traffic to Indian ports, due to local conditions only, the assistance of a powerful neutral whether for carrying only or as a supplier as well as carrier would be a valuable supplement to the efforts of the British mercantile marine in keeping alive the foreign trade of India; but as regards the supplies required for the army a perusal of the main headings which have been considered in the previous pages will show that the number of those which a neutral might bring us without abandoning his neutrality is few indeed, and hardly to be counted upon as important.

If, however, our very existence depends upon an open sea and supplies carried thereon, it is equally true that here in India we have exceptional facilities for availing ourselves of every chance of obtaining aid in this manner. Allusion has been made at the beginning of this essay to the very favourable position of India in this respect. On every side except the north approach is more or less easy from British possessions, whence reinforcements and supplies may come, whether it be from Australia and New Zealand in the south, from South Africa in the south-west, from Canada to the east, or from Great Britain by way of the Suez Canal towards the west. It is conceivable that in the early stages of a war the presence of hostile cruisers might bar approach from one or even two of these subsidiary bases, but it is difficult to imagine a situation in which, even temporarily, every avenue of traffic towards Indian shores would be so securely closed as to prevent entirely the arrival of fast-steaming merchant vessels. For instance, it is intelligible that at one and the same time the course of naval war might close to our ships the Mediterranean and Suez Canal route, and might render so dangerous the passage from Canada to India *via* Hong-Kong and the China Sea as practically to prevent approach from that direction. But even at such a juncture it is difficult to believe that any possible combination against us of naval strength would still have spare cruisers to watch for the approach of transports and horse ships, conveying to India important reinforcements and assistance from New Zealand and from the Commonwealth of Australia. Here again is seen the essential strength of the British Empire, based upon the sea, and derived from that very fact of its division into many and far scattered parts, which is often by a singular error regarded as an element of weakness.

Let it not be imagined, however, because we can count almost with certainty on never being completely isolated in India from communication with one or other of the great divisions of the Empire, that therefore we may indulge in a feeling of security, or neglect a careful watch over every detail of our reserves for war, whether the latter be in the form of local manufactures, or of accumulated stocks. On the contrary, the conditions in war are so varying and uncertain that this alone necessitates every possible effort being made to provide for all eventualities. The interests at stake are too great to allow of anything being left to the mercy of mere fortune. But, as has been already seen, the best which we can do in this direction is limited by narrow boundaries and the ultimate essential is command of the sea.

Conclusion.

We are thus brought back at the conclusion of the whole matter to the fundamental truth with which these pages opened, and which has recurred again and again in the course of the discussion of details; however great the strength of our army, however complete our preparations, the maintenance of our supremacy at sea is as essential to our success in military operations based upon India as it is to the very existence of the British Empire. It has been shown that it is the primary condition necessary for even an attempt to operate over sea, and the vital importance of the same factor in all considerable operations beyond the land frontiers of India has also been insisted upon. On the other hand, we have seen how strong, thanks to our sea-power, is our position in India against attack, how favourable alike for hostile efforts by sea, and for the maintenance of communications with other parts of the Empire. These favourable conditions should be increased in the future by the increase of our self-dependence and as a result of the development of the industrial resources of the country; and this progress, which will strengthen our military position by supplying within our borders the essential requirements of the army, will at the same time increase the wealth of India instead, as is now the case, of its revenues being perforce expended on the purchase from abroad of great stores of military material. This, combined with the maintenance of our sea-power, that is to say, our supremacy in mercantile marine as well as in naval strength, is the object at which England should ever aim in her government of India. As Captain Mahan has said: "To grasp Egypt

firmly, and to establish in India, Australia and the Cape sources of necessary supply, whether factories or depôts, in ammunition and stores, against the chance of temporary interruption on the side of England^a"; this is the true solution of the difficulties in maintaining the widely-separated empire of Great Britain. But above all it is essential to hold the sea, to provide that interruption between the several parts of the empire shall never be more than temporary. The influence of sea-power upon military operations based upon India is pre-eminent, its possession can alone make them possible, and supremacy therein is essential to their success. The application of this power to such operations does not differ materially from its application to any other military operations which may be undertaken by the British Empire, whether they be based directly upon England, or whether any one of her numerous dependencies form a secondary base whence an expedition may be launched against its objective. To seek out and to subdue the naval force of the enemy, and thus to ensure freedom of military transit in the first instance and then freedom of transit for commerce, this is the manner in which our naval strength must be applied; so long as it is maintained at a level which will give a reasonable prospect of success in this rôle, we may be confident that the well-considered preparation and training of our land forces for war will have every opportunity when the time of trial comes of bringing the hostilities begun by the navy to a decisive and successful termination.

Note.

In the foregoing pages authorities have (with a few exceptions) not been quoted, nor have references been made to previous writers on similar subjects, for the simple reason that if such references had been attempted they must have been so numerous as to become inconvenient. There are four writers who seem to have said all that there is worth saying about sea power in its relation to the British Empire; it need hardly be said that the foremost of these is Captain Mahan; the others are Sir George Clarke, Mr. Thursfield and Admiral Colomb. To write an essay about the influence of sea power upon the military problems of the Empire, whether with special regard to India or to any other portion of Great Britain is—more or less—to write, or at most to expand,

^a "Problems of Asia," page 82.

THE INFLUENCE AND APPLICATION OF SEA-POWER ON EXPEDITIONS BASED ON INDIA.

what one or other of these four has written already. To acknowledge the debts which are due to their works is practically to attribute to them the whole of the leading thoughts of the essay. Such an acknowledgment is due here, as is also due the gratitude of all British subjects to the men who have brought home to them the meaning of the phrase " Sea Power ", and the truth of the splendid words so aptly chosen as a motto for one of their books* :—

"μεγα γάρ τὸ τῆς θαλάσσης κράτος"

* "The Navy and the Nation" by Sir George Clarke and Mr. Thursfield.

THE EVOLUTION OF MODERN TACTICS, PART II.

BY MAJOR G. GILBERT, 34TH SIKH PIONEERS.

The military history of the 17th century affords much interest in the study of the evolution of tactics. Towards the close of the long era characterized by the dominance of the cavalry arm, to which I have previously alluded, the reassertion of the power of infantry and the introduction and gradual improvement of the new artillery arm, had, so to speak, unsettled the minds of military men, causing much perplexity and uncertainty as to the true functions of these respective arms and as to their proportional and intrinsic value as tactical factors on the battlefield. Generally speaking cavalry was still the most important arm and by reason of its superior mobility it still remained virtually the manœuvring and striking force in the field. Its importance, as we have seen, was threatened by the increasing power of the musketeers, but it met the difficulty by adding to the thickness and quantity of its armour and by adopting firearms as its chief weapon thereby losing in mobility, by this dragooning process, what it gained in fire effect. The footmen were invariably inferior in numbers to the horsemen. They were a combined array of pikemen and musketeers generally marshalled in dense phalanx formation and in bodies from 600 to several thousand in number, so formed, that the musketeers stood in small squares at the four corners of the parallelogram formed by the pikemen. The musketeers and pikemen were complementary to one another. Each without the other was at a great disadvantage and practically helpless against horsemen who could charge the former and cut them down before they had time to reload, and could ride up to the latter, when, halting at a safe and convenient distance beyond reach of the formidable pike, they could calmly fire into their dense and unresisting ranks. But the infantry formations, however much they varied in different countries, were all of them unequal to quick and difficult movements, and quite lacking in such important essentials as efficacy of fire, ability to attack or defend in any given direction other than the immediate front, and power to manœuvre in the field after once having been laboriously deployed into battle formation. Then again, the true value of artillery was still unknown, and guns were few and ill-served. Throughout Europe until artillery was organized on a military footing, first by Gustavus Adolphus

and later by Louis XIV of France, guns were served by civilian mechanics and artisans who gradually formed a guild of cannoneers in their respective countries. Their services were specially engaged for a campaign and dispensed with on its conclusion. They claimed certain privileges not enjoyed by the professional soldiers. The head cannoneer or the Master General of Ordnance as he got to be recognized in course of time, claimed as his right the entire ordnance taken in a captured town besides a proportionately large share of the booty—a not inconsiderable perquisite as may be imagined, when war was a game of organized plunder and the siege and sack of fortified towns the chief business of commanders of those times. The cannon then in use were of a large calibre and were transported with much difficulty and immense labour on the line of march. In battle they were massed usually in front of the centre and the draft horses were sent to the rear of the army, so that in the event of a defeat nothing could save the guns from capture.

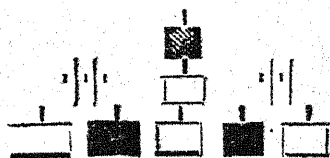
Under these conditions it was small wonder that a General gave his chief attention to his cavalry which was his most powerful arm. Artillery and infantry played but a subordinate part and a battle was won not by a skilful combination of the three arms but by a charge of horsemen launched against an exposed flank of the hostile army. At this period also the topographical features of a battlefield were ignored and consequently the disposition of the three arms, so that each should turn to account the local features of the spot had not entered the minds of men. Level ground was sought with an eye to the free movements of cavalry. The frontage occupied by armies owing to the compactness and density of both infantry and cavalry formations was comparatively very small and armies in strength rarely exceeded that of a modern Army Corps. The reasons for the restricted size of European armies at this period is to be ascribed partly to the preponderance of cavalry which then, as ever, was an expensive arm to equip and feed, and partly to the peculiar conditions obtaining in Europe at that time. Agriculture was in an extremely backward state and immense tracts of country were left uncultivated. Towns and cities were few and far between. Villages and hamlets were to be found, as a rule, only in the immediate vicinity of those towns and cities, which were themselves fortified places. Roads and communications were few and for the most part extremely bad. In nearly every possible theatre of war west of the Vistula considerable

tracts of country intervening between these fortified towns were mere wastes of morass and forest. Armies were accompanied by immense hordes of sutlers and camp followers frequently exceeding in numbers the armies to which they attached themselves. Armed forces in the field were deplorably deficient in nearly all the appliances and adjuncts which enabled those of a later period to move freely, namely, transport, magazines, trains, etc. The maxim that "war must sustain war" was the standard military dogma of the day. Armies subsisted by plunder and when a commander was not engaged in the laborious investment of some fortified place he would be conducting a series of elusive, hide-and-seek strategic manœuvres conceived with no other intention than that of transferring his army from a depleted and ravaged province to another which promised an abundance of forage and provisions when he went into winter quarters.

It is to Gustavus Adolphus, the Lion of the north, to whom credit is due for first shuffling out this chaotic state of affairs into something like system and method and paving the way for that higher development of scientific warfare which was soon to receive a further impetus from the great Commanders who followed him. He saw the value of mobility and discipline and the necessity for applying those qualities to his infantry arm particularly by means of proper organization, drill, and training and by instituting a system of forming magazines and rationing his troops, and prohibiting plunder. He perceived the importance of musketry and foresaw the eventual and inevitable establishment of infantry in supersession of cavalry as the main and decisive power of a commander in battle. He also realized the great importance of the artillery arm as a powerful adjunct to infantry and perceived that cavalry by being made to trot forward, halt, and fire deliberately, was being put to a wrong use and being shorn of half its power. Moreover he was the first to really grasp the importance of combining the three arms with a view to mutual assistance and co-operation, as he was the first to clearly establish on a modern basis the relative importance of the respective arms as tactical factors in deciding the fate of a battle.

It would be as well to glance at his methods of organization for he undoubtedly stands out in history as one of the greatest of military organizers. The armies of Europe in his day were militias just as they were in peace in the time of Philip and Alexander, but unlike them they were raised and

kept up to strength by a method peculiar to the times, of enrolling bands or companies of mercenary troops whose loyalty could be counted upon only so long as they were regularly paid, and whose allegiance was shifted from one commander to another practically at will. These trained bands, as they were called, were the outcome of the feudal system, and it had been the custom for powerful feudal chiefs to enroll them for the purpose of carrying on internecine war. But as the States of Europe began gradually to consolidate, this privilege of declaring and conducting war within the realms of a paramount sovereign was curtailed and eventually ceased altogether. The first in modern times, Gustavus organized a standing army—the bed-rock of military power—and subjected his newly created army to a thorough and systematic course of training and drill without which tactical manœuvring and rapid strategical movements are difficult if not impossible. The infantry company was fixed at 150 men, 75 musketeers and 59 pikemen, the remainder being officers and non-commissioned officers. Four companies formed a battalion, two battalions a regiment, three regiments a brigade. Companies and battalions stood in line with varying intervals, pikemen in 8 ranks and musketeers in 6 ranks, closing to 3 ranks when firing and the first rank kneeling so as to avoid the constant movement of successive ranks or platoons moving to the rear to reload as was the general practice in other armies. The formation of a brigade, or a demi-brigade as a regiment was sometimes called, was peculiar when deployed for action. The pikemen were separated into three bodies forming a wedge, and these were flanked by musketeers, some-



what as under, the shaded blocks representing the wedge of pikemen flanked by the light regimental pieces and the musketeers. Hitherto cavalry had been in 8 or 10 ranks. He cut them down to three ranks; deprived that arm of the musket and trained it

to gallop at full speed, using the sword and pistol only, and organized it in regiments of 4 squadrons. He studied the Turkish system of gunnery; improved on it; and was the first to introduce really light and mobile field pieces, 3, 4, and 6 pounders, which he distributed among the infantry, each regiment having 2 pieces. The heavier guns or cannon he organized as reserve field artillery under his able Chief of Artillery,

The first of these is the fact that the
 Government has been unable to secure
 the necessary funds to carry out its
 policy of non-interference in the
 internal affairs of the Republic.
 The second is the fact that the
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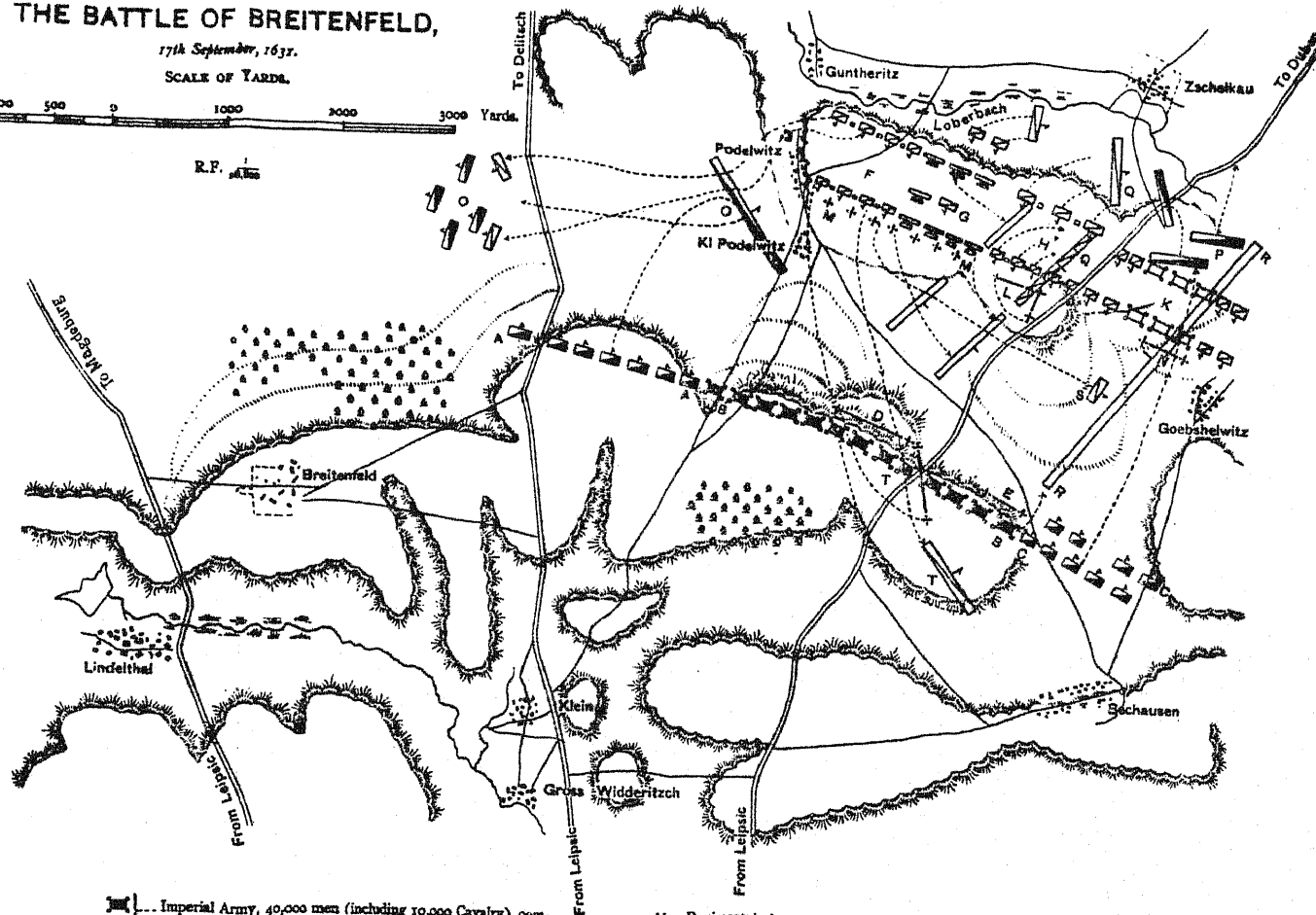
PLAN OF THE BATTLE OF BREITENFELD,

17th September, 1632.

SCALE OF YARDS.

Yards 1000 500 0 1000 2000 3000 Yards.

R.F. 1/100,000



Imperial Army, 40,000 men (including 10,000 Cavalry), commanded by Tilly.

- A. Pappenheim.
- B. Tilly's Battles.
- C. Furstenburg and Island.
- D. Tilly's Battery of heavy guns.
- E. Small Battery.

Allied Swedish and Saxon Army (26,000 Swedes, 16,000 Saxons) quarter Cavalry commanded by Gustavus Adolphus.

- F. Banner, right wing.
- G. Gustavus, centre.
- H. Horn, left wing.
- K. Saxons.
- L. Swedish heavy Battery under Torstensson.

M. Regimental pieces.

N. Saxon Artillery.

O. Pappenheim charges Banner six or seven times without orders, and finally driven off the field.

P. Furstenburg, also without orders, charges Saxons, routs them, and drives them off the field.

Q. Tilly seeing this makes flank march to attack Swedish left flank.

R. Gustavus orders Horn to change front and Hepburne's Brigades to support Horn, remainder to prolong to right.

S. Sends Gothland Horse to charge Tilly's flank on march.

T. With rest of Banner's Cavalry charges and captures Tilly's Batteries and turns them on him. Furstenburg driven off and Tilly's battles annihilated.

Colonel Torstenson, who devised a system of drill for the first time. Gustavus moreover instituted the modern system of rank amongst officers; armed his infantry with the improved flint wheel-lock; trained them to be rapid marchers; established a system of rationing his troops, a thing unheard of in those days and in war formed magazines and depôts, also an innovation. In a word he greatly improved equipment, arms, drill, discipline, rationing, medical attendance, technical engineering and gunnery, field manœuvres and earthworks and all modern improvements in these respects date from him.

Gustavus as a Commander is seen at his best in his 1630-32 campaign. Pre-eminent as he stands in his times as a strategist and as an organiser, he is in comparison not quite so good as a tactician. He was unable, in spite of his high perceptive faculties, to tear himself away from the thrall of the parallel order of battle. At Breitenfeld, see plan, he showed remarkably quick decision in meeting a manœuvre directed by Tilly against his flank. He performed what Darius failed to do at Arbela. What is more important, his movement bears the character not of passivity but that of an energetic counter-attack of the most effective kind, for it deprived Tilly at one stroke of his guns and his line of retreat. Hitherto it was the custom to mass the guns in front of the centre of the line of battle. Consequently the fire of these great batteries could only be concentrated on one spot which was not necessarily either a weak or a vulnerable point in the enemy's line of battle, and the moment fire was directed at an objective away from that particular spot it became divergent or eccentric and therefore less effective. Gustavus by attaching light field pieces to his regiments and brigades, both cavalry and infantry, greatly strengthened the entire front of his line of battle. This light artillery was the prototype of the modern brigade division of horse and field artillery. *The dispersion of gun-power admitted of concentrated fire being brought to bear on more than one point.* It was this new manifestation of power which caused Pappenheim to get restive and out of hand, and which contributed, conjointly with the detachments of musketeers posted in the intervals between the cavalry brigades, towards rendering his determined and repeated cavalry attacks absolutely abortive. Gustavus by his dispositions at this battle originated the *true principle of the co-operation of the three arms*. Not only did he strengthen his cavalry wing with artillery and infantry but

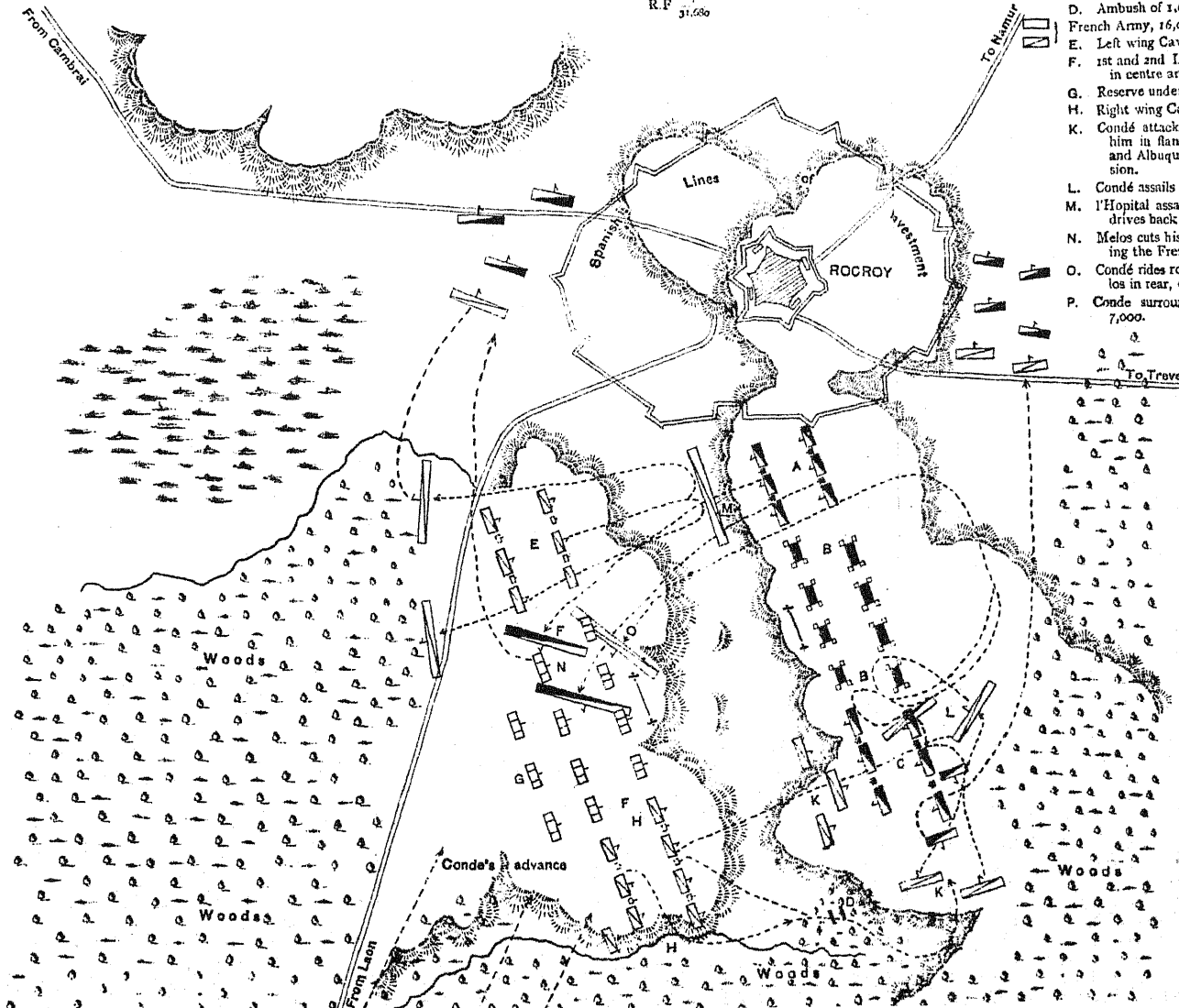
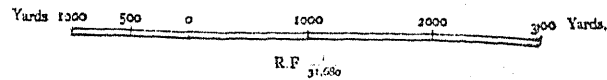
he posted cavalry with his infantry centre and what is more important he held *cavalry in reserve under his own immediate command*—a measure never adopted before his time, not even by Cæsar, and one so frequently neglected since. Moreover at the battle of Rain in the same year he for the first time demonstrated the value of artillery in forcing the passage of a river strongly held by an army of equal strength. By posting his batteries on opposite sides of a re-entering bend of the river he brought a concentric fire to bear on the space enclosed by that bend and under cover of this protective fire he constructed his bridges and threw over his infantry and cavalry. It was an operation then deemed impossible but one subsequently so often repeated by Napoleon under more difficult conditions. But at Lutzen though his line of march brought him directly on the right flank of Wallenstein's army in position, Gustavus on reaching the village of Lutzen held by the enemy's right flank, deliberately moved off circling round it and drew up exactly opposite his opponent, thereby losing a splendid opportunity of establishing an imperishable reputation for himself as a tactician. Some of his biographers seek to extenuate his Generalship on this occasion by explaining that he did not mean "to snatch a victory" from Wallenstein—a quixotic enough idea in war. But the plain fact is, that even a man of the mental calibre of Gustavus was unable to dissociate himself entirely from the military traditions of centuries and in spite of his indubitable strategic skill and his great foresight in correctly gauging tactical tendencies towards higher development he yet had his limitations. Had he not been cut off prematurely on the field of Lutzen, it is not improbable that in any future campaigns he would have shown that gradual improvement on his previous tactical performances which we perceive in the careers of Turenne and Frederic the Great. Breitenfeld was his masterpiece. The result of this battle electrified Europe and its immediate effect was to raise the "Snow King" to such a pinnacle of fame as to cause him to be regarded as the greatest military commander perhaps since Cæsar, and to induce the nations of Europe to set about copying his methods, his organization, his training, and his tactics.

It is not to be supposed, however, that changes in the organization and tactical formations of European armies on the Swedish system were sudden. On the contrary, nothing effectual was done till after the close of the Thirty Years War.

PLAN OF THE BATTLE OF ROCROY,

19th May, 1643.

SCALE OF YARDS.



Spanish Army, 18,000 Foot and 9,000 Horse, under command of Melos.

- A. Right wing under Melos.
- B. Centre, Infantry battles, under Fuentes.
- C. Left wing Cavalry under Albuquerque.
- D. Ambush of 1,000 musketeers.
- E. French Army, 16,000 Foot and 7,000 Horse, under Condé.
- F. Left wing Cavalry under l'Hopital and La Ferte.
- G. 1st and 2nd Line Infantry under d'Espinant. Pikemen in centre and musketeers on flanks of corps de bataille.
- H. Reserve under Marshal Sirot.
- I. Right wing Cavalry under Condé and Gassion.
- J. Condé attacks Albuquerque and sends Gassion to take him in flank. The musketeers (D) are cut to pieces, and Albuquerque driven off the field pursued by Gassion.
- K. Condé assaults flank of Fuentes' battles.
- L. l'Hopital assaults Melos who makes a counter charge and drives back l'Hopital.
- M. Melos cuts his way through d'Espinant's Infantry reaching the French reserves and captures the guns.
- N. Condé rides round rear of Spanish Army and charges Melos in rear, drives him off, and recaptures guns.
- O. Condé surrounds Fuentes killing 9,000 and capturing 7,000.

As an illustration I attach a plan of the battle of Rocroy fought twelve years after Breitenfeld. It will be observed that the infantry formations of Tilly are still preserved by the Spanish troops, but the French infantry have adopted a formation somewhat resembling the Swedish, that is to say, the resisting power was placed in the centre of the unit and it was flanked by an effective and numerous body of musketeers. This battle by which Condé acquired so much fame, is, from a tactical point of view, inferior in importance to Breitenfeld. It is remarkable chiefly for the great tactical similarity it bears to Cannæ, but Hasdrubal did not display the want of judgment shown by Condé in charging unshaken infantry in front when he might, by earlier using the infantry reserve under Marshal Sirot, have utilized his squadrons in assailing the flanks and rear of the veteran Spaniards under Fuentes.

It has been generally supposed that the great impetus to the development of tactics in its modern stage is due to the introduction of gunpowder and the invention of cannon and firearms. This is to my mind by no means the true cause. Notwithstanding the fact that cannon and muskets, or the latter's prototype the arquebus, had been in use since the 14th century I have, I hope, made it clear that up to the middle of the 17th century the tactical conduct of a battle is in no way distinguishable from the methods employed at Cannæ, or Pharsalus with the exception that archers are replaced by musketeers and the balistas and catapults of that period are superseded by cannon. The real cause of the great advance in the art, is the discovery of the bayonet—in itself a simple fact, but one which exercised the most revolutionary effect on the art of war and particularly on what I deem to be its more important branch, namely, tactics. As I have already shown, the pike was the only really effective answer to an onslaught of cavalry. But as the offensive power of the pike ceased beyond the reach of the weapons of the leading rank, cavalry discontinued to charge at top speed, adopted firearms, and usually rode up to the infantry and halted to fire into its ranks. Gustavus trained his cavalry to charge at full speed, but his cavalry tactics were an exception to the general rule obtaining in Europe in the 17th century. It was necessary therefore to stiffen and protect the pikemen with musketeers. The proportion of these two classes of infantry varied in different countries, but it was impossible for either to act without the assistance of the other. The invention of the bayonet in 1669 gave to the musketeer just that power of shock resistance

at close quarters in which he was lacking before and which the pikeman possessed, without in any way detracting from his offensive fire-power at a distance. It enabled infantry to escape from the dilemma of having to adopt a dense formation in order to resist cavalry, but in doing which, it fell a prey to the increasingly destructive power of cannon whose projectiles tore remorselessly through its serried ranks. However simple and necessary a contrivance a bayonet may seem to us at the present day, it must be borne in mind that the musket and its prototype the arquebus had been in use for a period of nearly four centuries before the bayonet was discovered, and even then, it was merely a long iron prong adjusted to the muzzle of the musket by means of a wooden plug inserted into the barrel, so that when fixed, the musket could not be loaded and fired until it had been removed. It actually took twelve years to rectify this defect by the invention of so simple a device as a socket for the bayonet.

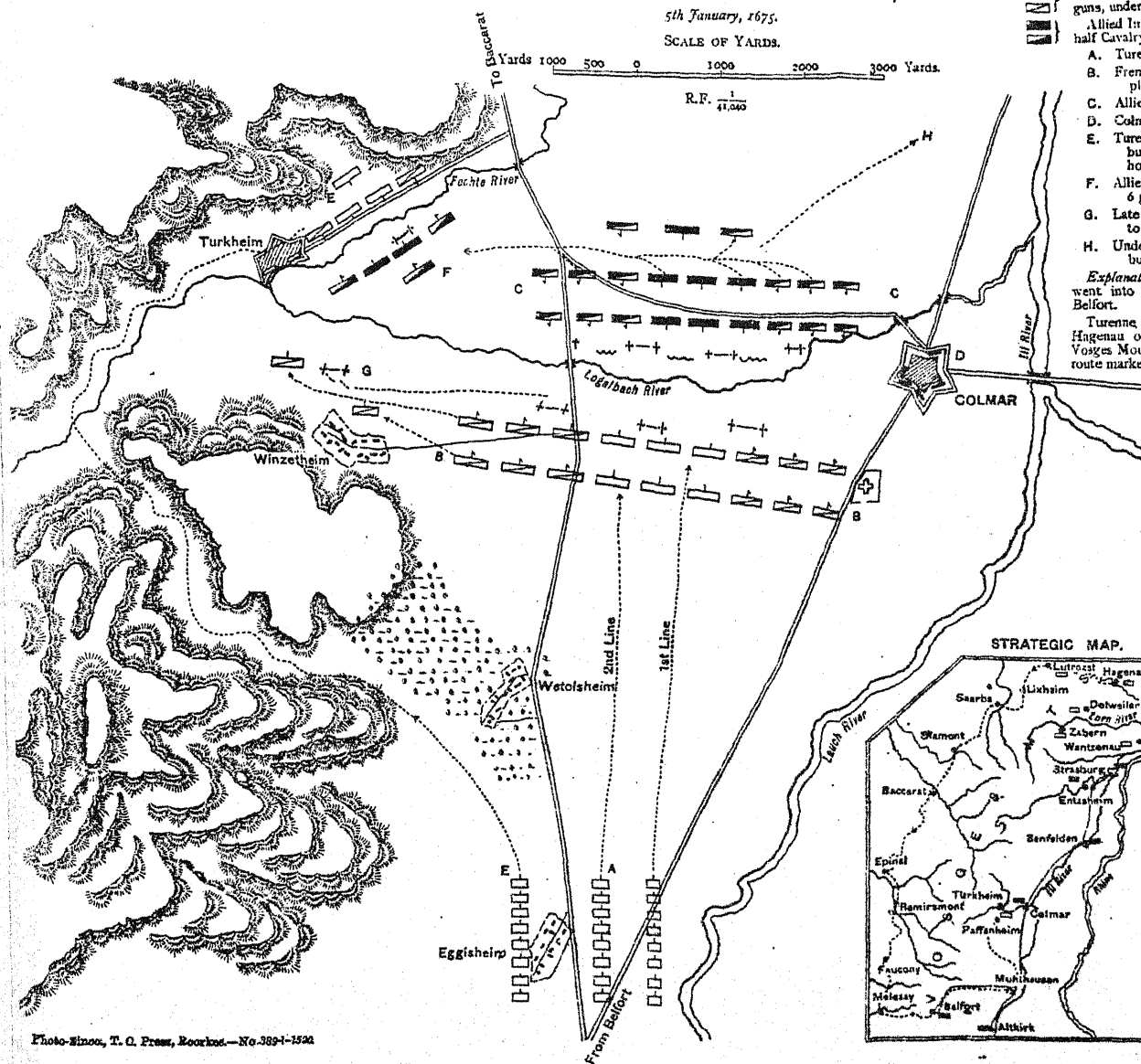
Turenne, a master of his art and the greatest military chief since Gustavus Adolphus, had already perceived as his great predecessor had done before him, that infantry, hitherto kept in the background, was naturally the most important of the arms, by reason of the facility with which it could manoeuvre and fight over practically any kind of ground. In the earlier campaigns during the close of the Thirty Years War the armies he had commanded were organized on the old system of two-thirds cavalry to one-third infantry and a proportion of one gun to about 1,000 men. In his last campaigns extending over the years 1672-75 we find his armies composed of rather less than half cavalry, notably at the battles of Entzheim and Türkheim. He repeatedly urged the further proportional increase of infantry and by his advice Louis XIV reorganized the French artillery; horsed it and trained it in a thoroughly efficient manner; and divided it into batteries having a fixed establishment. But the great reforms advocated by Turenne were not destined to be carried into effect during the life-time of that great soldier. None the less is it true that Turenne created the French army a force which towards the close of the 17th century had swelled to enormous proportions compared with the armies of a half century before, and it had already become the terror of Europe. The great merit of Turenne lay in his having altered the system of warfare then in vogue particularly in its strategic aspect. He was far above the military prejudices

PLAN OF THE BATTLE OF TURKHEIM,

5th January, 1675.

SCALE OF YARDS.

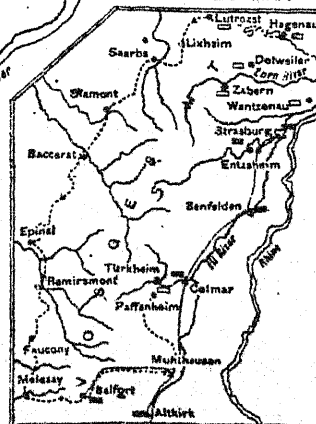
R.F. $\frac{1}{41,040}$



- French Army—15,000 Foot, 13,000 Horse, 30 guns, under Turenne.
- Allied Imperialists and Germans about 35,000 men, half Cavalry, under Brandenburg and Bournosville.
- A. Turenne marching from Paffenhofen.
- B. French army, right and centre columns, deployed.
- C. Allied army drawn up for battle.
- D. Colmar held by Allies.
- E. Turenne's turning movement with left column, but without guns. Two Battalions Allies holding Turkheim driven out.
- F. Allies detach 12 Battalions, 30 Squadrons, and 6 guns to retake Turkheim but fail.
- G. Late in day Turenne orders his guns to bear to left to enfilade enemy at Turkheim.
- H. Under cover of night Allies retreat on Strasbourg.

Explanatory.—After battle of Entzheim Allies went into winter quarters between Strasbourg and Belfort. Turenne resolves on winter Campaign. Leaves Haguenau on 29th November, 1674, marches round Vosges Mountains to Belfort and, surprises enemy—route marked by dotted line.

STRATEGIC MAP.



SCALE OF MILES
0 10 20 30 40 50 Miles

of the day and preferred manœuvring and fighting to wasting time in sieges that were often unnecessary and indecisive. In his day war was a game of sieges. Armies seldom undertook distant marches. When not entrenched before some fortress, they were to be found in great entrenched camps where whole summer's were wasted. Winter campaigns were out of the question. Perhaps the best illustration of this mode of warfare is presented by the operations of Gustavus and Wallenstein at Nurnburg in 1632, which was redeemed by the former's attempt to storm the Alte Veste. But Turenne put in practice the strategic principle of operating on the enemy's line of communication. This compelled his adversary either to emerge from his entrenched lines to fight, or to hasten to manœuvre on to his line of communication again. He was also the first in those days to conduct a winter campaign: witness his Türkheim operations in 1674-75. But I am not so much concerned with his methods as a strategist, as I am with his abilities as a tactician. The best criticism of the military operations of Turenne is no doubt that dictated by Napoleon at St. Helena. But this criticism though trenchant and penetrating, deals entirely with the strategic aspect of that General's campaigns and barely touches on his tactics. The study of the long and eventful military career of Turenne extending over half a century from 1625 to 1675, discloses one of the most remarkable instances of steady improvement in the tactical art. What greater contrast, for instance, can there be, than between the tactics of Mergentheim 1645 and Türkheim 1675. This latter battle is to my mind one of the most interesting perhaps in the whole history of warfare. It marks the division between the strictly parallel order of battle and the parallel-cum-oblique order of battle. It seems to me impossible to deny to Hannibal the immortal merit of having established the principle of a combined frontal and flank attack. We have seen that Nero illustrated the same principle by a manœuvre on the battlefield *after* deployment for the conflict, which was a step in advance. But at Türkheim Turenne made a still further advance by illustrating how this principle could be put in practice *by manœuvre whilst on the march and before contact with the enemy*. It was in fact the earliest inception of the principles underlying what was subsequently known as Grand Tactics the necessary conditions of which are manœuvring power, calculation of time and space, combination and surprise. It will be observed, see plan of the battle of Türkheim, that

armies are beginning to occupy a more extended frontage in proportion to their numbers; that cavalry and infantry are each disposed in three lines and that artillery power though still massed is more disseminated along the entire front. Turenne's manoeuvre was so successful as a surprise that, had he pushed his flank attack instead of merely taking up a position on the west bank of the Fechte and giving the enemy time to meet it, he would have inflicted a crushing defeat on the allies. Moreover his frontal attack should have been more active, and it will be observed that Turenne not only did not send artillery with his flanking column, but he omitted to provide for an enfilade fire from his frontal attack in support of his flank attack until too late in the day when he discovered his error.

Within a few years of Turenne's death on the field of Sasbach, his reorganization schemes carried out by Louvois began to take effect. Already the infantry regiments had been greatly increased, and this arm now numbered three-fourths of the entire strength of the French army. Napoleon sites this revolutionary change in the proportional strength of cavalry and infantry as inaugurating a new era in warfare. But as a matter of fact the great increase in the infantry arm was the effect rather than the cause of this startling change in the aspect of warfare. The true cause, as I have already indicated, was the discovery of the bayonet and the invention of a socket. For, in the first instance, the pike could now safely be abolished. Infantry battalions were uniformly armed with musket and bayonet. The front of a battalion deployed was considerably increased by dispensing with the deep phalanx formation for pikemen, and still further increased by reducing the infantry to three ranks, thus giving the French infantry battalion of 600 men a deployed front of about 200 yards. The cavalry also was permanently cut down to three ranks as Gustavus had done more than half a century before. The effect of these changes in formation alone was to practically treble the frontage hitherto occupied by an army of given strength. But this lengthening out of the front of a line of battle by a reduction of the depth of the files was not all. Armies were themselves presently greatly increased in size by considerable additions to the infantry branch. In the last decade of the 17th century Louis XIV put from one to two hundred thousand men in the field. Towards the close of his reign the French army mustered 264 regiments of infantry, 222 of which had been raised by

Louis himself; and a French regiment at that time consisted of three battalions of 600 men each. This then was an additional cause for the great increase of the battle front of an army.

The general result of these circumstances had a most important bearing on the development of tactics. Armies about to engage instead of occupying a few hundred yards of front now filled comparatively large spaces, and as these could scarcely ever be open plains but presented local features such as woods, streams, hills, folds of ground, hedges, lanes, villages, etc., it became of increasing importance to turn to account these peculiarities in any impending conflict. A General of an army could no longer survey with the naked eye, from where he stood, not only his entire army but the peculiarities of ground in its area of operation. The topographical features of ground now for the first time forced themselves on the attention of a commander when considering either offensive or defensive action.

The days of the formal and slow marshalling of opposing armies within a half or at most a mile of one another had ceased. A Commander now required more information as to ground and as to the enemy's dispositions. Reconnaissance by the cavalry and also personally by the General himself became an ever increasing necessity. A general acceptance of Turenne's strategic principle of making an enemy's army in the field the real strategic objective necessitated the discontinuance of great entrenched camps and lines behind which armies lay idly for months. As marching and manoeuvring became more constant, questions involving protection on the line of march and security in camp became pressing. Moreover, whereas formerly the tactical objective was some weak point in the solid human and equine wall drawn up opposite in serried array, which it was usual to assail with cavalry, now it began to be perceived that the tactical objective was a topographical key point the possession of which would facilitate the discomfiture of the enemy by rendering his whole position untenable. An extensive battle-front made it not only undesirable but impossible to guard it effectually in equal strength throughout its entire length. A preponderance of strength was concentrated at what were then deemed key-points and intrenchments and field works came more and more into use for the strengthening of weak parts of the line particularly of the defence. And skill in tactics henceforth began to consist less in seizing an

opportunity to hurl cavalry upon infantry exposed or disordered, than on so disposing the three arms, and particularly the artillery, as to derive the full advantages afforded by topographical characteristics and accidents of ground.

In order to realize this great stride in tactical development we must turn to the battles of Blenheim and Ramillies. In the quarter century preceding these great and instructive battles the tactical principle practically applied by Turenne at Türkheim was successfully repeated by Luxemburg at the battle of Fleurus in 1690 and by Catinat at the battle of Marsaglia near Turin in 1693. But neither of these two able soldiers nor even Villars nor Eugène can be credited with having established any new principle in tactics. It is not until we turn to a study of Blenheim and Ramillies that we recognise an advance in the art initiated by Turenne's ablest pupil Marlborough. At Blenheim (see plan) we perceive for the first time the effect of the great change in the general character of tactical formations which I have alluded to above and particularly of the defence. We observe Tallard and Marsin groping for correct principles of defence under the changed conditions of warfare. It is true they had strengthened their position by the dissemination of artillery power. But the locking up of the bulk of the infantry in the villages of Blenheim and Ober Glanheim which Tallard regarded as the bastions of the position, the curtain of which he held with cavalry, is instructive by reasons of its very faultiness. Not only Tallard but even Eugène and Marlborough conceived Blenheim to be the key to the French position. Consequently in their joint plan of attack Marlborough and Eugène decided that the latter should occupy the attention of Maximilian and Marsin, whilst the former assailed Blenheim. Lord Cutts gallantly attacked this village with a strong column of all arms, but after five hours' stubborn fighting, all attempts to capture it failed. It was only then perceived by Marlborough that the weak curtain of cavalry between Blenheim and Ober Glanheim was the vulnerable spot in the French line, so massing all available troops of all arms opposite this point he assailed and broke it; and wheeling to the left, found Tallard and half the French army at his mercy hemmed in between himself, Lord Cutts and the Danube. *Marlborough crystallized the fundamental principle of concentrating a superior force against a decisive and weak point.* But what I would particularly draw attention to, is the differentiation between the attack and the defence, in so far as relates to the specialization of dispositions made on

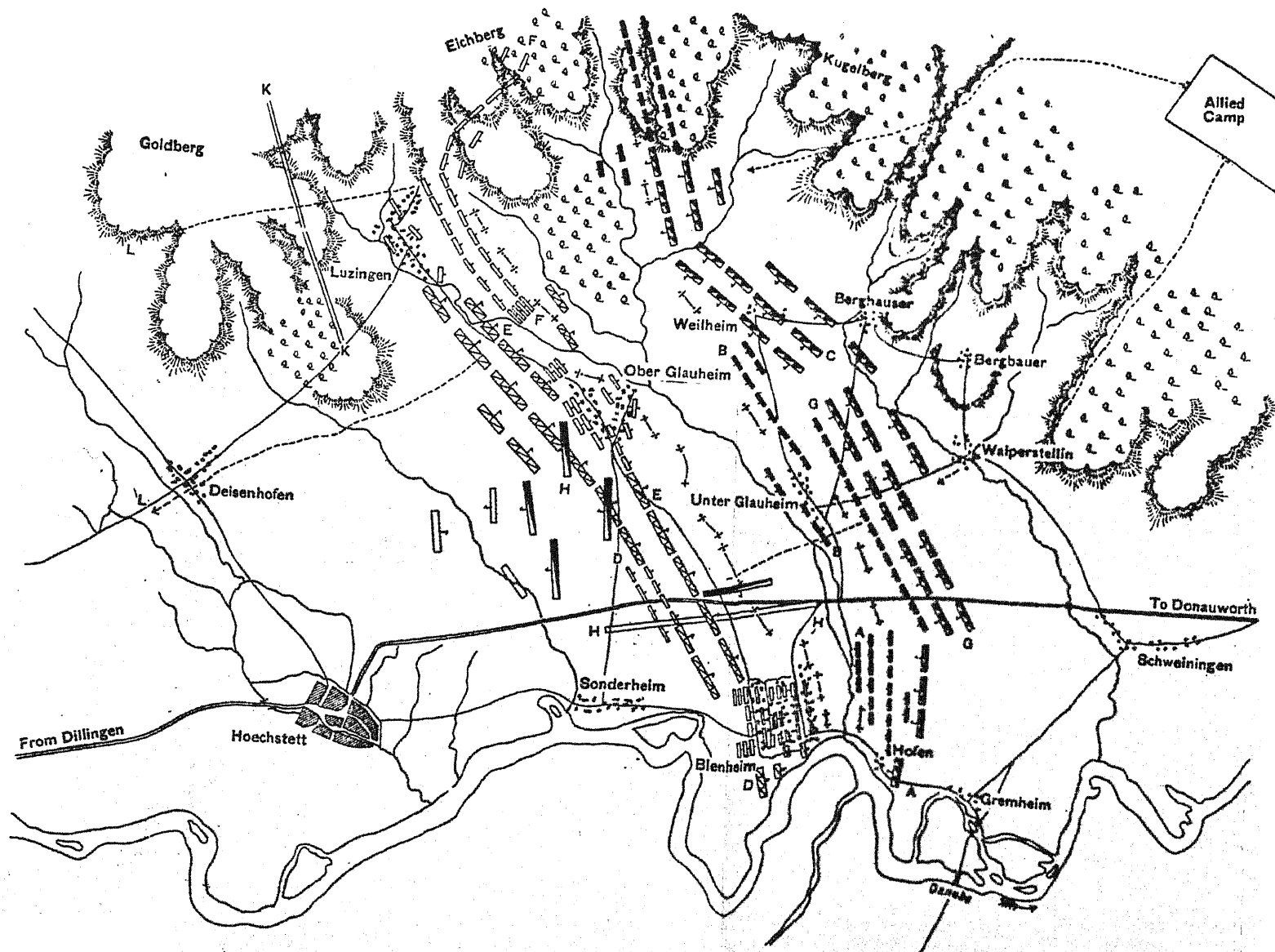
OF SPECIAL INTEREST.

THE BATTLE OF BLENHEIM,

13th August, 1704.

SCALE OF YARDS.

Yards 1000 500 0 1000 2000 3000 4000 Yards.
R.F. $\frac{1}{38400}$



Allied English, Dutch and Imperial Army under command of Marlborough and Eugene.

A. Lord Cutts attacking Blenheim with Wilken's and Wood's Brigades.

B. The Prince of Holstein.

C. Eugene attacking left of French Army.

D. Tallard commanding right wing.

E. Marcin commanding centre.

F. The Bavarians under Maximilian.

G. Marlborough's decisive attack, successful.

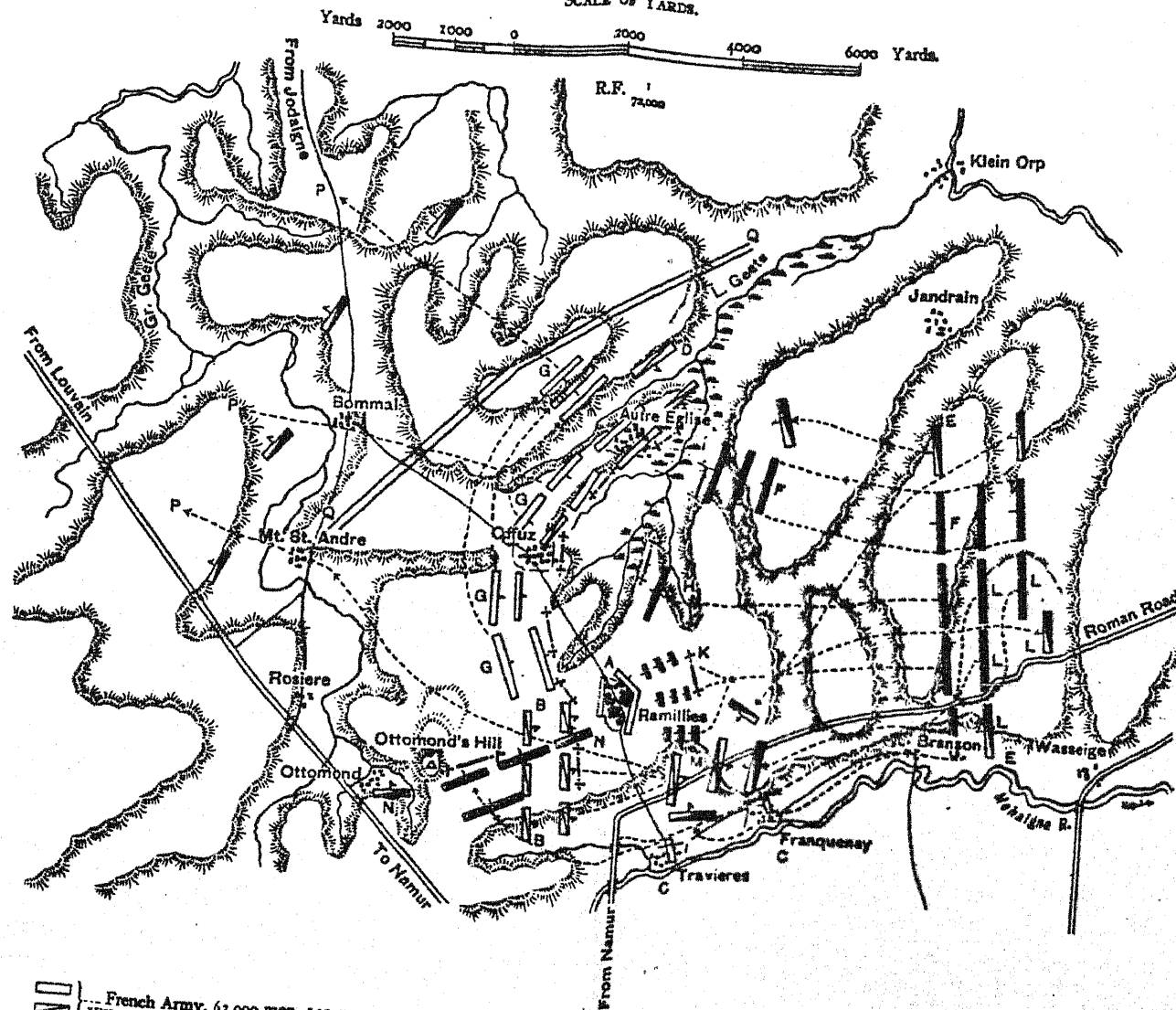
H. His second position resulting in capture of Tallard's wing.

K. Eugene's second position.

L. French and Bavarian Line of retreat.

PLAN OF THE BATTLE OF RAMILLIES, 23rd May, 1706.

SCALE OF YARDS.



French Army, 62,000 men, 130 guns, commanded by Marshal Villeroi.

- A. 20 Battalions holding village of Ramillies.
- B. Villeroi's right flank Cavalry.
- C. Villages of Travières and Franquennes lightly held.
- D. French left resting on Autre Eglise.

Allied army 60,000 men (English and Dutch), 120 guns, under command of Marlborough.

- E. Marlborough's Army deployed.
- F. Strong column to make a feint on Autre Eglise.
- G. Villeroi deceived reinforces Autre Eglise with his Reserves.

- H. Centre of Allied 1st Line making a holding attack.
- K. 12 Battalions 1st Line making a feint on Ramillies.
- L. Marlborough moves the bulk of his 2nd Line and Reserve and Franquennes and Travières to turn the French left flank.
- M. Cavalry action in which French Cavalry are defeated.
- N. Marlborough has turned French position by seizing Ottomond Hill.
- P. Villeroi's Army in hopeless rout.
- Q. Marlborough pursuing.

either side which hitherto we have failed to discover in the era of the parallel order of battle. With the light of fuller knowledge we should now regard the Eichberg as the key to the French position and had Eugène captured those heights by Turenne's manoeuvre the disaster to the French army would conceivably have been on a larger scale.

But however decisive and great the battle of Blenheim was from a political point of view, it is from a tactical standpoint completely dwarfed by Ramillies, which is undoubtedly Marlborough's masterpiece, and which was, in the establishment of tactical principles, perhaps more prolific than any other battle in history. In spite of the lesson taught at Blenheim, Villeroi's dispositions for the defence were similar to Tallard's with all the inherent defects repeated. Marlborough in his reconnaissance this time saw at a glance and correctly gauged the true key to the position which was the commanding ground marked by Ottomond's tomb. Its possession would have a decisive effect in enabling him to command and enfilade the whole of Villeroi's position and to bar his direct line of retreat on Mons. *Marlborough was the first to demonstrate that the true key to a position is a topographical one.* Turenne at Turkheim had assailed the enemy's flank farthest from his line of retreat but *Marlborough proved that the most vulnerable flank is the one nearest the enemy's line of retreat.* Moreover the dispositions for the attack made by him are profoundly superior to anything until then conceived. At Blenheim we have seen him concentrating a superior force at the decisive point, but at Ramillies he put this principle into application *in its form of greatest intensity by adding to it the elements of deception and surprise.* For he directed a strong column on Autre Église to conceal his real intention and to deceive Villeroi, in which he was entirely successful. Then holding him with his first line along his entire front and with a secondary false attack on Ramillies itself, he directed the bulk of his second line and reserves under cover of some rising ground in overwhelming strength against his real objective the Ottomond Hill, which Villeroi had neglected. *We have here the principle of a holding attack, a feint, and a decisive attack* established for the first time under its modern aspect. Finally, when the French army broke and became disorganized, Marlborough did not, in the customary manner of his age and even long after, spend a week on the battle-field to "celebrate the event singing Te Deums" as Napoleon sarcastically expressed it, but he

pursued as Alexander always pursued. The wreck of Villeroi's army with difficulty found refuge under the walls of Louvain with the English horse at their heels.

In my opinion Marlborough ranks with Hannibal as one of the greatest of Tacticians. Perhaps no General in history has had so many detractors, certainly none whose reputation has been so unjustly belittled by foreign historians, as Marlborough. Even Napoleon gives tacit consent to this general depreciation. In the category of great commanders whose campaigns he recommends should be read and re-read if we would extract from them the secret of the art of war, he excludes Marlborough and includes Eugène. Now the latter, it is true, made a reputation in the Turkish wars: the former had served with distinction under Turenne particularly at Entzheim with the English contingent. Both had commanded in concert and each had enhanced his reputation when in independent command. Great as were the victories of Zenta and Turin, both were lacking in any special tactical merit. At the former battle a Turkish Army was caught crossing the Theiss river and practically destroyed by a converging artillery fire. The latter was a frontal battle of the parallel order type. Cassano was a wasteful blunder and Luzzara was faulty in execution, both being archaic in method. None of these battles bears the least comparison in merit with Ramillies. Nothing perhaps tells so strongly in favour of Marlborough as the result of the campaign of 1712. He had been recalled to England by a Ministry unfavourably disposed towards him, and Eugène succeeded him as Commander-in-Chief of the allied Army in the Low Countries. Villars thereupon assumed the offensive, defeated Eugène at Denain and not only compelled him to evacuate the Scheldt Valley but drove him into Germany. Napoleon's refusal to concede to Marlborough a niche in the temple of fame, may be attributed without doubt to a strong feeling of national prejudice. He was an Englishman, that fact was in itself intolerable. In this connection, I consider this great man to have been not only insincere, but ungenerous. The internal evidence of the history of his military career points unmistakably to his having been a close imitator of Marlburian tactics. Compare Blenheim and Ramillies with Austerlitz. It is impossible to doubt the great Corsican was as familiar with the achievements of Marlborough as he was with those of Eugène. To me it seems inconceivable that a man of

his discrimination and discernment could have overlooked the importance of the principles underlying the tactical skill displayed at Ramillies. Especially when those principles give the keynote to Napoleonic tactics and in fact to modern tactics generally.

This naturally leads to a consideration of the relative and intrinsic importance of tactics and strategy as cognate branches of what in the abstract we designate military science. When forming an opinion on the degree of excellence of the *generalship* displayed by any great commander do we base it on his merits as a strategist or a tactician? And if on a combination of both, to which of the two qualifications do we attach the greatest weight? There can I think be little doubt that hitherto strategy has been held to be the higher of the two arts and that more importance has been attached to it in all the military surveys of campaigns with which we are familiar in history. But is this always likely to be the case or is it even the case in the present day? I venture to think not. And in giving expression to this bold heresy, I am conscious that it is opposed to the tenets of all the great military schools of the day. Strategy deals with the movements of hostile armies from their original home bases up to their arrival on the field of operations in close proximity to or within striking distance of one another. Tactics is the art of handling those armies on the battle field. The dividing line at which the one ceases and the other begins, for the time being at all events, is the line of contact between the most advanced troops or scouts, no matter how distant of those two hostile armies. In former times, for example in the 17th century to go no further, the strategic stage of operations presented sometimes stupendous difficulties, and the tactical stage, culminating in battle was comparatively brief and simple. But now the real and direct responsibilities of a commander-in-chief of a modern army in the field only begin when he has reached that dividing line. From that moment he has literally nothing to aid him to further progress but his own skill, foresight, judgment, and talents. In the initial or strategic stage this mental strain and isolation is not necessarily the case. The commander-in-chief of an army in the field may have had little or nothing to do with the preparedness of that army for war. He may have had no part or lot in its organization for field operations. Its mobilization and concentration on the theatre of operations

may have been carried out under circumstances entirely unknown to him. The selection of the theatre of operations may have been determined upon grounds of political expediency and may even be entirely opposed to his own views based on a knowledge of the principles of strategy. Where the commander of an army about to embark on war is a military dictator like Cæsar or Napoleon or an autocratic sovereign like Gustavus or Frederic, combining in his person the functions actual or virtual of the head of the state and the commander-in-chief of the army, the conflicting claims of political needs and of strategical demands may be harmonized or coordinated, or the former may be made to subserve entirely the latter. But with the continued growth of the modern system of responsible government grafted on the autocratic or mediæval form, the gradual effect has been to transfer the province of strategy from one man and one brain to several men and many brains constituting such bureaucracies as Cabinets, Defence Committees, Army Councils, or General Staffs.

"The theatre of war," says Hamley, "is the province of strategy: the field of battle the province of tactics." Precisely so, but have we quite realized the degree to which the latter has been enlarged and complicated and the extent to which the former has been correspondingly contracted and simplified in these modern times? And are we quite clear in our minds as to the extent to which the acquirement of the principles of these two branches of military science has a direct bearing on the formation of those qualities which in the abstract we denominate as generalship? Colonel Tovey, late Professor of Strategy and Tactics at Chatham, tells us that, "strategy is the science of generals in opposition to tactics with which officers of all grades are concerned." And again that "strategy is a more complicated art than tactics, requires closer study, more exact calculation and varies less with time." Now this tersely expresses the view not only accepted but taught in all the military schools of the day. It is the old distinctions drawn by Xenophon between *Strategos* and *Tacticos*. What might have been true even in the days of Napoleon is not necessarily true today. Steam and electricity have effected a revolutionary change in the province of strategy to an extent not yet evidently fully recognized. In Europe, for instance, the facilities for transporting and maintaining immense armies by means of railways spread over the entire continent, like a net the meshes of which are getting smaller

THE EVOLUTION OF MODERN TACTICS.

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and smaller, has had the effect of narrowing and contracting the province of strategy. This network is spreading gradually over the entire habitable globe, that is, over every conceivable theatre of war. In Turenne's day the strategic movements of a French Army for the defence of Alsatia or for the invasion of Franconia occupied months. In 1870 the concentration of three entire German Armies in the theatre of operations in the vicinity of Strasbourg and Metz was effected within three weeks of the day in which war was declared. At the present day it is not too much to say that this strategical mobilization and concentration could be even more expeditiously performed. On the other hand the province of tactics is being enlarged. Days and weeks may be spent by units of armies in the strategical stage sitting in railway trucks or stowed away on steam ships, but in the tactical stage, now as ever, they must go afoot when taking the field. Smokeless powder, and long range weapons, quick-firers and magazine rifles have, *inter se*, necessitated wider extensions, increased the difficulties of logistics, or staff duties as they are now called, emphasized more acutely the importance of intercommunication between units and the transmission of orders and reports, and rendered the work of reconnaissance, the obtaining of reliable and accurate information of the enemy's movements and dispositions, and in fact of intelligence work generally more hazardous, more difficult and more tedious than ever before. The frontage of our modern division greatly exceeds that of an army in the 17th century. Battles then fought in a restricted front lasted a few hours, the result perhaps being known and observed by every combatant present. Now a battle lasts days and nights at a stretch. It consists of a series of contests of greater or less intensity at various points, though all of them connected and all of them designed with a view to the attainment of the tactical objective in view. We have just had this illustrated in the most unmistakable and instructive manner at the battle of Liao-yang, which lasted thirteen days from 26th August to 7th September, and on the last day the battle front of Oyama's army from Kuroki's right to Oku's left, extended over a front of 45 miles. The skill required to scientifically elaborate, manipulate, and direct forces over a tactical area of such vast extent must necessarily be great. The Continuous strain—mental, moral, and physical—on the Commander of a modern army under such conditions, must be obviously exhausting to a degree never before experienced. Considerations such as

these, it seems to me, inevitably and clearly lead one to the conclusion that the relative and potential displacement of strategy and tactics is certain of general recognition in the near future.

(To be continued.)

CAVALRY AND ITS CRITICS.

BY EXETER.

Admitting that we must look to Infantry for enduring results, it cannot be denied that Cavalry have in many campaigns initiated those successes which have been consummated and made lasting by the mainstay of armies. Hannibal, perhaps the greatest of all military geniuses, thoroughly understood the capabilities of the mounted arm, while from a perusal of the records of their doings, it is evident that the Roman leaders, with the exception of Scipio Africanus, relied solely on their Infantry. Thus when opposed by the Carthaginian army, they had but one arm to oppose to two, worse indeed, for although moving in their own country, their Intelligence Department was, owing to their lack of Cavalry, so ill served, that the well-informed Carthaginians fought their enemy when they pleased and on their own conditions. At the opening battle on the banks of the Ticino, the luckless Romans learnt what it meant to encounter efficient horsemen. Hannibal's army was composed of men recruited from many races, the Republican Host were all of the land for which they fought, an obvious advantage. The Cavalry of the Romans consisted of about 4,000 of the Roman nobility, that of the Carthaginians of about 12,000 men who appear to have been mainly drawn from Numidia. From what accounts of the battle are available, it is evident that this body of horse was no mere mob of savages, but a trained and disciplined force capable of obeying its Commanders even when flushed by success; and what this implies, Cavalry officers will thoroughly appreciate. The Roman General had to depend upon his 4,000 Yeomanry. When the rival armies engaged, the Carthaginian Infantry were giving way before the trained courage of the Roman foot, when the Carthaginian horse, rushing like a cataract on the Roman Knights, scattered them in an instant, and then wheeling swept along the rear of the Republicans, trampling down the Infantry like standing corn. Thrasymentus and Cannæ were but repetitions of this disastrous story. The Romans were thorough, but slow, and for years they appear to have been unable to grasp the causes which led to their discomfiture. The occasion however at last produced the man. Scipio the Younger, afterwards known as

"Africanus," had been watching events, and had fathomed the reason of his country's disasters. When in course of time he was called on to command the oft defeated Roman armies, he at once set to work to remedy existing weaknesses. It was plain to his clear understanding that the first necessity was to place his own forces as regards organisation on a level with those of his opponent. So long as a purely Infantry army fought one composed of Infantry and Cavalry, so long was success hopeless, and defeat annihilation. The creation of an efficient Cavalry was therefore his first care. He set about his task with a thoroughness and lack of prejudice which at once stamped him as a sound and practical soldier. Enlisting a force of some 20,000 men, he trained both men and horses with the most rigorous care. He armed his troopers not with the short heavy infantry sword, a weapon manifestly unsuited for Cavalry use, but with a long curved sabre, probably borrowed from the enemy. This alone shows indubitably that the young general did not allow himself to be bound by tradition, but was perfectly ready to take a hint from his enemies. From the very outset of the final campaign the effects of the reorganization were patent; covered by their Cavalry screen the Roman Army was at the same time secured from surprise attacks, and made acquainted with the dispositions of the enemy. Hasdrubal, marching to his brother's assistance, was attacked, defeated and slain. The question naturally arises what were the Carthaginian squadrons doing that they allowed the Roman cavalry to have matters so much their own way.

The answer is a simple one. The invaders had been for 11 years in the heart of Italy, they had managed to reinforce their Infantry from time to time, but not their Numidian Cavalry, who from casualties and disease were now reduced to less than half the number which they originally mustered. The horses, too, must have deteriorated in quality and training. When the two armies met for the decisive struggle, their respective conditions were exactly the reverse of those that obtained at the outset of the war. The Carthaginian foot had become through practical experience masters of the art of fighting; they had indeed nothing to learn from their adversaries, their cavalry, from the reasons we have mentioned, was a vastly inferior arm to that which rode down the stubborn legionaries at Cannæ, and Thrasymenus. On the other hand, what was formerly the weakness of

the Roman Army was now its strength. The battle began with the foot, and so formidable had Hannibal's battalions become that the legions could make but little impression on them, but at the critical moment the Roman Cavalry in overwhelming force swept away the gallant Numidian Horse, and then wheeling, fell on the Carthaginian Infantry putting them to utter route. But of all the achievements of Cavalry on ancient battlefields, certainly none are more glorious than those of the "Companion" Cavalry at Arbela. Alexander's army consisted of but 47,000 men, of whom 7,000 were cavalry. The exact number of the army under Darius will never be known, certainly the Macedonians were outnumbered, perhaps ten to one. The Persian host were evidently no despicable adversaries, for the first charge of the Scythian Cavalry on Alexander's flank came within an ace of success. However the Scythians were repulsed, and the *Hetairoi* of the Greeks, bursting through the centre of the Persian Army, threw it into irremediable confusion, and then rallying galloped back to meet and overthrow the hostile horse who under Mazarus, had pressed the left of the Macedonian array near to destruction.

With the Greek Cavalry we have nothing more to do, for Macedon produced but one Alexander. But it is certainly strange that the Romans with such an object-lesson before them, should have allowed the mounted branch to become practically extinct. We hear continually of the marching and fighting power of the legions, but there is hardly any mention of their mounted comrades. Julius Cæsar occasionally speaks of mounted orderlies, but apparently he had no use for cavalry as a fighting unit. "*Tempora mutantur et nos mutamur in illis*," the great soldier would probably have said had he been asked the cause of this remarkable phenomenon. In his time, Rome made war against very different adversaries to those who fell before Scipio Africanus. Julius Cæsar's wars were mostly waged against barbarians, brave but unskilled, and poorly armed. Cavalry could do but little in the difficult country inhabited by the wild German tribes, the Romans were in no hurry, and what they conquered they held by the simple process of exterminating all malcontents. Cavalry might have hastened the end somewhat, but if a bit slow, the legions were very sure, and there being no real necessity for the upkeep of an expensive arm, it was gradually aban-

done as no longer a necessity. When in her decline, Rome was harried by hordes of mounted savages, the lack of efficient cavalry must have been sorely felt. From the fall of the Roman Empire to the wars between England and France in the 12th and 13th centuries, may seem a wide jump, but take it we must ; for with the Empire perished the military historians, and although there was much fighting in the interim, it was either unrecorded, or recorded by monkish historians whose ignorance of their subject precluded lucidity of description ; and we are but little the wiser for their accounts of the battle of Senlac, or the Standard. When our kings crossed to France, we again get a glimpse of the manner in which battles were fought, and our first impression is that with Rome, perished not only the historians, but the art of war as well. At the period of which we write, France was undoubtedly the most prominent as well as the most civilized nation in Europe, and how were her armies composed ? They need but a brief description. A large cavalry contingent composed of the nobility, some bowmen, mostly mercenaries, and a crowd of tag-rag-and-bobtail, armed anyhow, the servants and tenantry of the nobles who formed the cavalry. The disciplined valour of the legion was quite unrepresented, and the cavalry although brave as could be desired, and individually skilled in arms, was undisciplined and incapable of manœuvring with precision. There was absolutely no cohesion between the different arms, the mounted nobility so despised the motley crowd of serf infantry, that on occasion they did not hesitate to ride over them in order to come to lance thrust with their foes.

The English Army was constituted very differently. The cavalry like that of France was enlisted from the nobility and landed gentry ; numerically they were so inferior that they could only venture to charge on rare occasions. The Infantry were beyond all comparison superior to anything France could show. Not serfs but freemen, physically and mentally they were braver, more self-reliant, and more skilled in weapons, than the despised and downtrodden wretches who fought under the "*Fleur de lys*"; another great point, the English gentry were well content to become officers in their ranks. The bowmen were led, not driven into action, and right well they justified the confidence reposed in them. Accustomed to ride down Infantry with hardly an effort, the Gallic chivalry were astonished and dismayed by the rain of arrows which pierced armour of proof, and brought horse and

man to the ground. Undisciplined and ill trained, although individually "able men of their bands," they fell at once into confusion, and the rout was completed by the charge of the English knights. The effect of these continued defeats of cavalry, in those times considered invincible by Infantry, was long enduring. The tables seemed to have completely turned, and until the appearance of Henry of Navarre, the horsemen do not seem to have regained confidence in themselves. Even that great leader though only succeeded in partially righting matters. For shortly after his decease, we again find cavalry tactics characterized by hesitation and timidity. Probably the supersession of clumsy and slow matchlock by the wheel-lock, and snaphaunce in their day regarded as wonderful inventions, has much to say to the abandonment by cavalry of their proper rôle for that of Mounted Infantry. Certain it is that from the end of the 16th to the beginning of the 18th century, cavalry relied not on shock, but on the effects of their fire for success. Man and horse heavily armoured they rode up to within easy range of Infantry at a trot, discharged their pistols, or musquetoons, and then wheeling outwards by files, retired to reform in rear of their comrades. For the time, the wiseacres who maintained that cavalry could not charge unshaken Infantry were in the ascendant. For long, long after the abandonment of armour these false and mistaken theories were held to be infallible. Beliefs once established die hard, and it was reserved for Frederic the Great of Prussia to prove to the military law givers of his day that their dogma was radically unsound. As invariably happens the capable chief found capable lieutenants, and the names of Ziethen, and Seidlitz, will ever be remembered by students of the art of war. At the time of the Prussian Hero's appearance on the scene, the Cavalry of France and Austria were still blindly following the tactics of the preceding century, engagements between bodies of Cavalry seldom got beyond an exchange of carbine fire, and charging unbroken infantry seems to have been vetoed as madness. It is remarkable that a nation of dashing horsemen like the Austrians should have so completely accepted this view of the situation. Truly one has only to repeat a dogma often enough, and loud enough, to ensure its acceptance. Ziethen and Seidlitz may with justice be termed geniuses, for they had the moral courage to maintain in the face of all the military talent of their age that the accepted ideas as to the rôle of cavalry were false and unsound. They were fortunate in serving under a master who, if he cannot be

placed on quite the same platform as Hannibal, Napoleon, or our own Marlborough, was at least a very able tactician and a keen, quick-witted soldier, thoroughly able to appreciate the ability of his generals. The training of the Prussian horsemen was most rigorous, the trot practically disappeared when manœuvring and everything was done at full speed. The troopers were taught that their one object was to close with the enemy at a gallop, sabrein hand. Carbine fire they were rightly told to despise. How rigorous the peace training was may be judged from Seidlitz's reply to Old Fritz when the latter objected to the number of fatalities on parade. "If Your Majesty wants to have an efficient cavalry you must not object to a few broken necks on parade." We have not space within the limits of this article to dilate on the magnificent deeds of the Prussian Cavalry, suffice to say that the horsemen of France and Austria, adhering to the false system then accepted as gospel, cut the sorriest of figures when they encountered the disciples of the new school. Rossbach was their crowning glory, when Prussian Hussars charged and overthrew the heavy cavalry of France. Yet it would seem that nations forget lessons as completely and almost as quietly as individuals, for although in the wars of the Directory, cavalry did a good deal in the way of shock tactics, they wasted much time in desultory firing with carbines and pistols. Napoleon immediately checked this evil tendency, and under Murat, Lasalle, and other leaders, the French Cavalry, at one time the worst in Europe, soon became the best. Observing that the French troopers were individually inferior to those of Austria, and Prussia, Napoleon made up by numbers what he lacked in individual skill, and by employing divisions where his enemies employed brigades, and brigades when they were content with regiments, achieved such a succession of victories, that in a short while his horsemen acquired such confidence in themselves that they did not hesitate to attack even when outnumbered. Now again the anti-cavalry school is beginning to make itself heard. It points complacently to the Magazine Rifle and asks how squadrons are to ride through its death-dealing stream of projectiles. Presumably these gentlemen forget that in the Soudan, not horse, but footmen managed again and again to penetrate British Squares; and although the Martini, in range and accuracy, is much inferior to the Lee-Enfield or the Mauser, it is for stopping a rush of Cavalry, or Infantry, very

nearly, if not quite, the equal of these weapons. What little we know of the fighting in Manchuria also goes to prove that bodies of Infantry armed with Magazine rifles not unfrequently fight out the issue with the bayonet. If the day of the bayonet has not gone by, then assuredly it is rash to assume that we have done with lance and sabre. *Pace* Mr. Winston Spencer Churchill and his "mediæval ironmongery."

MODERN CAVALRY EQUIPMENT.

By B. C.

The following is a translation of part of an article, written by Hauptmann von Haeften, of the Great General Staff of the German Army, at Berlin, and published in the current Quarterly Journal of the German Army. During the present controversy regarding the sword, lance and rifle for Cavalry and the best way of carrying the same, they should prove to be of general interest.

In the South African War, the weight that the horse had to carry was considerably lessened, owing to the fact that many Cavalry Regiments, especially those which joined later, carried neither sword nor lance, and had as their only weapon the carbine, and later on the Rifle. Owing to this, however, the Cavalry sank in their value completely to Mounted Infantry.

That, however, the South African War has taught that the efficiency of Cavalry in the future requires only the use of the Rifle, is one of the many questionable doctrines which this war has developed, owing to the special characteristics of the enemy, and of the scene of action.

Cavalry, to be fully efficient, must have sword and lance as well as a shooting weapon, no matter how unfavourable this may be to the appearance and comfort of man and horse.

The question arises, nevertheless, whether the value of Cavalry as such could not be still further heightened by giving it a better and, above all, a longer range weapon, and equipping it with the Infantry rifle, especially since its rôle is, in most cases, to fight at long range, when on foot.

By the present method of carrying the carbine, whether it is carried on the back as in the Russian Army, and partially in the British Army (Colonial Troops), or on the right side as in the German Army,—this altogether desirable change is not yet possible.

Later on in the South African War some British Cavalry Regiments carried the rifle in an upright position on the left side, so, that the rifle was gripped at the small of the butt by an arrangement fixed to the near side of the saddle, the barrel being held fast behind the left shoulder of the rider by means of a special contrivance.

This was a new method invented by Lieutenant-Colonel J. H. Patterson, D.S.O., of the Essex Imperial Yeomanry."

[Here follows a detailed description of the equipment as issued to our Native Cavalry; *i.e.*, (1) Saddle frog, with steel clip, to carry the rifle on the near side of the saddle and take the whole weight, (2) Belt, with slot attachment, to secure the rifle to the rider, by means of: (3) the ovel-headed stud on the lower band of the rifle.]

Of course, by this method of carrying the rifle, the sword must be carried on the right side of the saddle. This however would be a matter of no consideration whatever. On the contrary, the weight on the horse would be more advantageously divided on both sides.

The fundamental idea of this invention is, without doubt, sound and practical. It has altogether superior advantages over any method of carrying the rifle tried up to the present.

Above all, with this method it would not only be possible to equip the Cavalry with the longer range weapon of the Infantry, but it would also do away with the great disadvantage of having the firearm fastened to the horse's saddle, as with us. It would then be attached to the rider and when he, either owing to a fall or on being wounded, got separated from his horse, he would not be, as up to the present, almost weaponless.

Of course, by such a method of carrying the rifle, a union between horse and man is established, but this disadvantage is only an apparent one, for this union is such a loose one, that when the rider separates from his horse, the rifle must, in every case, loosen itself automatically from the saddle.

Other advantages of this equipment consist in this, that the rider whether mounted or dismounted has both hands free, and that the detaching of the carbine from the saddle, which always takes up so much time before the weapon can be used, is no longer necessary, so that the rider is more speedily ready for action.

Further, this method of carrying the rifle is more comfortable on horseback than any other way, and it allows a much more free and unhindered use of the lance and sword.

Besides this, in hand-to-hand fights, the barrel of the rifle partially protects the back of the rider.

Finally the weight and cost of this equipment is less than that of the present pattern.

Lord Kitchener has, during the past year, had trials made in the Indian Army of this method of carrying the rifle. These turned out so favourably that a short time ago the Patterson invention was adopted there.

The trials which are being made in England are not yet over.

I think that the above extract shows us how wide-awake the German General Staff is to watch for any foreign military experiments and improvements. It also fairly indicates the trend of Continental opinion regarding the armament of Cavalry.

GILLESPIE OF COMBER.

BY MAJOR R. G. BURTON, 94TH RUSSELL'S INFANTRY.

The wars of the early years of the nineteenth century brought into prominence many fine soldiers, not only in Europe but in India, where for nearly a quarter of a century British swords were seldom sheathed. Many of these names have passed into oblivion, or are known only to students of history who have studied the details of the half forgotten minor campaigns and military episodes of those times. The lustre of their deeds in the east was dimmed, or at least overshadowed, by the great drama that was being enacted in Europe, and particularly in the Iberian Peninsula where the illustrious soldier who commenced his career in the east, and won his first laurels at Assaye, was fighting for the liberties of a continent.

Of all the brave and skilful soldiers of those times none was more distinguished than Robert Rollo Gillespie, the story of whose military career is adorned with glorious deeds, and illuminated by romantic episodes. Few men had even then taken a prominent part in so many desperate enterprises, as the brave officer who fell before the walls of Kalunga in 1814. He was born at Comber, County Down, on the 21st January 1760, and was gazetted an Ensign in the 45th Foot when only ten years of age. That there was nothing unusual in this early appointment is evident from the gazettes of those times, when juvenile promotions even to field rank were not unknown, as witness the story of the visitor to the house of an acquaintance, who enquired what the child upstairs was crying about, and was told that it was only the Major "greetin' for his parritch." He was transferred as Lieutenant to the 45th Foot, and on the disbandment of that regiment was appointed Cornet in the 3rd Regiment, Irish Horse (now 6th Carbineers) on the 25th April 1783. In 1786 he contracted a clandestine marriage with the daughter of Thomas Taylor of Dublin. In the following year when he was quartered at Kildare he acted as second to a brother officer named Mackenzie in a duel with a brother of Sir Jonah Barrington. Shots were exchanged without result, when a dispute arose as to the termination of the encounter, and a quarrel took place between Barrington and Gillespie. A fight was arranged on the spot, each holding

the end of a handkerchief, firing at the word given, when Barrington was shot through the heart, and Gillespie escaped with a slight wound, the bullet being deflected by a button. He was tried for wilful murder, but acquitted by a verdict of justifiable homicide.

In 1792 he was promoted to a Lieutenancy in the 20th Light Dragoons, which was raised for service in Jamaica, and maintained at the expense of the Island. In the attack on Port-au-Prince, the chief town of San Domingo, then a French possession, but now a black republic, he distinguished himself by swimming ashore with a flag of truce, and his sword in his mouth. Those who have seen the sharks in Port-au-Prince harbour, as I have, will appreciate the recklessness of this adventure, the danger of which was enhanced by fire opened from the shore, and it is related* that Gillespie would have been shot on landing had he not made himself known as a freemason to the Governor, who was a fellow-craftsman. During his residence in San Domingo his house was attacked one night by eight desperadoes who murdered his servant, but hearing the noise, Gillespie fell upon the assassins with his sword, killed six of them, and was dangerously wounded by the other two, who then made their escape. Gillespie was a little man, and the fame of his exploit preceded him, so that when he appeared at the King's levée on his return home George III said, when he was presented to him, "What! is this the little man who killed all the robbers?"

Later on he exchanged into the 19th Light Dragoons, then stationed at Arcot, and proceeded to India through Germany, Austria, Servia, Constantinople, Aleppo and Baghdat. Colonel Biddulph says—the journey was a hazardous one at that time, and he had more than one narrow escape. At Constantinople, he fought a successful duel with a French officer who picked a quarrel with him. Shortly after Colonel Gillespie's arrival at Arcot, an event occurred at the neighbouring station of Vellore, which led to a feat of arms that will ever be connected with his name. There was a strong fort at Vellore, of irregular shape with massive granite walls, the upper parapets lined with brick work, with embrasures at certain intervals. The main rampart had round towers and rectangular projections,

"The Nineteenth and their times"—By Colonel John Biddulph. An excellent book descriptive of the many campaigns in which British Cavalry regiments bearing the number 19 took part between 1749 and 1885.

while beneath was a *fausse-braye* and a broad ditch. There was at one time a considerable garrison at Vellore, and fifty years ago the ditch, which was full of water, contained a number of crocodiles. There was a garrison order prohibiting the destruction of these reptiles, but the British subalterns used to catch them surreptitiously on an arrangement of hooks, baited with a goose, or used to shoot them when they came to the surface, a pariah dog, soundly beaten on the bank, serving as a dinner-bell to the hungry monsters. It is even said that no less a person than the Brigadier Commanding at Vellore had been seen looking on, from the concealment of an embrasure, and enjoying the sport that was being carried on contrary to his orders. It is also related that when the evening gun was fired nightly the crocodiles all sank to the bottom of the moat, owing to the noise or concussion, and soldiers wishing to break out of barracks used to take the opportunity to swim across, returning in the morning when the gun, fired at reveillé, gave the signal to the reptiles to sink again to the bottom of the ditch.

After the capture of Seringapatam in 1799, and the death of Tipu Sultan, the family of that potentate was interned at Vellore, where they were provided with an establishment of a magnificence more in accordance with their former state than their present condition. Their quarters in the fort resembled a palace, and large numbers of their adherents had been allowed to follow them, while husbands for the Princesses came from different parts of India. A nucleus of disaffection was thus formed, and the Muhammadan sepoys of the garrison were, not unnaturally, infected with the spirit of rebellion. An additional cause of disaffection arose in the ill-advised action of the military authorities of the time, in introducing a new fashion of turban, to which the sepoys objected, owing to its resemblance to the head dress worn by the East Indian drummers, and a rumour spread that this measure was preparatory to forcible conversion to Christianity. Shortly afterwards another objectionable order was issued, directing that "a native soldier shall not mark his face to denote his caste, or wear earrings when dressed in his uniform; it is further directed that at all parades and on all duties, every soldier shall be clean-shaved on the chin. It is directed also that uniformity shall, as far as is practicable, be preserved in regard to the quantity and shape of the hair on the upper lip." It was only to be expected that such inconsiderate orders, prejudicial to the sentiments and religion of

both Hindus and Mussalmans, should cause the smouldering discontent already existing, to break out into open mutiny.

The garrison of Vellore consisted, in July 1806, of four companies of His Majesty's 69th Regiment; six companies, 1st Battalion 1st Madras Infantry; and the 2nd Battalion, 23rd Madras Infantry; the whole under command of Colonel Fancourt. At Arcot, 16 miles distant, Colonel Gillespie had under his command the 19th Light Dragoons, and their comrades of Assaye and many another field of battle, the 7th Madras Cavalry, known in those days as the "Black Nineteenth," from their close connection with the Dragoons. The 69th were quartered in the fort; the sepoys mostly lived in the native town outside, providing certain guards within the fort precincts, where also their arms were kept. Some of the guards were composed of mixed native and British soldiers.

A field day had been ordered for the 23rd Madras Infantry on the 11th July, and the men, contrary to the usual custom, had obtained permission to pass the night of the 10th in the fort, where their arms were kept, so as to be ready for next morning's parade. At half-past two in the morning the sepoys of the main-guard suddenly attacked their British comrades and murdered all except four, who contrived to escape. At about the same time an attack was made on the barracks of the 69th, and was continued throughout the night. Meanwhile some officers and a sergeant, alarmed at the firing, had met at the house of Lieutenant Ewing, 1st Madras Infantry, who had secured the arms and ammunition of four men on guard at his house and after an attack had been repulsed, proceeded to the adjoining house of Surgeon Jones, which offered greater facilities for defence. From here Sergeant Brady went out to reconnoitre, and returned in an hour with the information that all the Europeans on guard and the Commandant of the garrison had been killed, the Mysore flag had been hoisted, and the barracks were being attacked by musketry and the fire of two 6-pounders. At 8 o'clock in the morning the sepoys broke in at the back of the house, but the officers effected their retreat to the barracks by the front. There they found many killed and wounded by the fire of the guns, which were playing on them from short range. The men had few cartridges left, having been provided with only six rounds per musket; but a sally was made by some 200 survivors out of the 372 men forming the detachment of the 69th. An advance was made along the ramparts to the main gateway, under a heavy fire from the

palace, by which several officers and many men were killed and wounded. A party was left to hold the gateway, while the remainder drove the sepoys from the south-east bastion and cavalier, and won their way to the grand magazine, which, however, was found to contain nothing but gunpowder. All the officers had now fallen, with the exception of Surgeons Jones and Dean, who gallantly led the survivors. The party returned to the gateway, the Mysore flag being pulled down *en route* under a heavy fire by Sergeant McManus and Private Philip Bottom of the 69th Regiment.

At daybreak that morning Colonel Gillespie rode out on the way to Vellore, where he had an engagement to breakfast with Colonel Fancourt. He had not gone far when he was met by a messenger galloping from the fort, who had been despatched with news of the outbreak by an officer who resided outside the walls. In a very short time Gillespie, with a squadron of the 19th under Captain Wilson, and a troop of the 7th Cavalry, was thundering along the road to Arcot, leaving orders for the remainder of the 19th and the galloper guns, at that time attached to British Cavalry regiments, to follow. The 69th had been in Jamaica four years before, and when the relieving party approached, Sergeant Brady, who was with the survivors over the gateway, exclaimed.—“If Colonel Gillespie be alive, God Almighty has sent him from the West Indies to save our lives in the East!” The moment was critical, for the detachment had expended their last cartridges, and the sepoys were gathering to destroy them, but, seeing the approach of the troopers the greater number retired to the further ramparts, leaving the gateway and one bastion to Sergeant Brady's party of the 69th. There were four gates, of which the two outer ones were open, and the drawbridge was down. The third gate was opened by some of the 69th, who were lowered by their belts, but they lost several men during this operation, and were unable to force the fourth gate. Gillespie then forced the wicket, and entering the fort with Captain Wilson and three men on foot, attempted to open the last gate from the inside, being all the while exposed to a heavy fire, but was unable to do so, as it was strongly locked and barred. At this moment Gillespie found a rope, which he threw up to the men over the gateway, who hauled him up on to the ramparts. Seizing a pair of regimental colours, the gallant Colonel at once headed a bayonet charge against a battery, turned the guns on the mutineers and, although there was no ammunition, kept them in check for a time. At this

moment, when it seemed as if the fate of the party could no longer be averted, the remainder of the 19th and the galloper guns appeared at the gate, which was commanded by two guns, while the sepoys had assembled to dispute the entrance. Placing himself at the head of the survivors of the 69th, Gillespie headed a bayonet charge which cleared the way for the Cavalry; the gate was burst open by a shot from one of the galloper guns, the Cavalry charged into the fort, and the mutineers were slain to the number of 350, while others who escaped through the sally port were cut down outside. By 10 o'clock all was over. The 69th had lost 115 killed and 76 wounded; the 19th had one trooper killed and 3 wounded, and Colonel Gillespie was ridden down and badly bruised in the *melée*.

Such was one of the most stirring incidents, not only in the life of the gallant man of action who is the subject of this memoir, but in the history of India. Who can now visit the fort of Vellore without hearing—in fancy—Gillespie and his dragoons and galloper guns come thundering up the road from Arcot!

During the next few years Colonel Gillespie does not appear to have been employed in any military adventures, but he found an outlet for his energies in hunting big game, and we find him in 1810 engaged in spearing a tiger on Bangalore race-course. In 1811 an expedition for the conquest of Java was despatched from India. The first division of the expeditionary force, under command of Colonel Gillespie, set sail from Madras roads on April 18th and a landing was made near the mouth of the Marandi river, not far from Batavia, on August 4th. Next day the horse artillery and cavalry were disembarked, and Colonel Gillespie moved along the Cornelis road beyond Chillingching, and on the 6th reconnoitred the country within two miles of the capital, as far as Anjole point. On the 7th Colonel Gillespie's force crossed the Anjole river by a bridge of boats between 10 P.M. and midnight, and in the morning Batavia was entered without opposition, the enemy's scouts galloping off in the direction of Weltevreden. At night the enemy made an attack, but Gillespie moved out with a force, and obliged them to retire. It is related that "the quarters occupied by Colonel Gillespie were kept by a Frenchman, who had been a menial servant of General Daendels. This man poisoned the morning coffee, and the Colonel and his Staff, who had taken it, were all seized with most violent pains and vomitings. The fellow had a cup poured down his own throat, though very much against his will, and it produced the same effect on him."

MAP SHOWING

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MAP SHOWING
THEATRE OF OPERATIONS DURING THE
JAVA EXPEDITION,
1811-1812.

SUMATRA

BANCA

Patimban

Sunda

Strait of Sunda

Bantam

Batavia

Buitenzorg

Cheribon

Samarang

Salatiga

Djoejo Carta

Fort Ludovik

Sourabaya

MADURA

BALLY

LOMBOEK

BORNEO

Sambhar

JAVA

Princes 10

Java Ho

Bardamu

Batavia

Buitenzorg

Cheribon

Samarang

Salatiga.

Fort Ludovik

Sourabaya

Djoejo Carta A

MADURA

BALLY

LONDON

On the morning of the 10th Gillespie marched towards Weltervreden, where he arrived at daybreak, but the enemy had retreated to Cornelis, a mile further on, and had there taken up a position with the left on the Great Jacatra River and the right on Slokan.

The road was blockaded and swept by four of the hostile guns, whilst the French infantry kept up a galling fire from a wood which ran along both sides of the road. The guns were engaged by three British pieces, and the sharpshooters were extended along the whole front to occupy the enemy's attention whilst his flanks were turned, and the villages in his possession were fired. The guns were then charged and captured at the point of the bayonet, and the French troops fled towards Cornelis, pursued up to the very batteries of that place by a squadron of the 22nd Dragoons under Colonel Gillespie.

After this action a position was taken up within 800 yards of the enemy's outworks at Cornelis, where General Janssens had concentrated his whole camp between the unfordable rivers Jacatra and Slokan. It was not until the 25th August, after the artillery duel had lasted some days, and the enemy had made an unsuccessful sortie, that the British were ready to make an attack on the position.

Both the plan and execution of the main attack were entrusted to Colonel Gillespie, who determined to surprise the right of the hostile force and enter the position by a narrow bridge over the Slokan on that flank, while auxiliary attacks were made on the front and rear. Before daybreak on August 26th Colonel Gillespie, leading the main column, supported by a second body under Colonel Gibbs, and guided by a sergeant who had deserted from the enemy, proceeded along the Slokan through the jungle. The distance to be traversed was some 2,000 yards, and shortly before sunrise the head of the column arrived near the bridge, when it was found that they had lost touch with the support. The day was fast approaching. Already a faint light diffused the Eastern sky, and the mists of night were beginning to disperse before the coming dawn. The success of the enterprise depended upon immediate action. A retreat would entail discovery and the failure of the expedition, but the prospect of attacking a fortified position, held by 13,000 men, and armed with 300 guns, with a handful of men, was sufficient to daunt the boldest heart. But in Colonel Gillespie, the bravest of the brave, the column had a leader whom no dangers could appal and no

difficulties discourage. Placing himself at the head of the little band, and trusting that Colonel Gibbs would arrive in time to support him, he led the way against a redoubt on the near side of the bridge, captured it, destroyed its garrison, and seized the bridge over the Slokan, which was the key to the position. This bridge was swept by a storm of grape from the enemy's batteries, which flanked it, and was defended in addition by four guns, whilst the passage was so narrow as to admit only two men abreast, and was protected in front by *trous de loup* and other obstacles. But the British soldiers were not to be denied. Fired by their first success, and inspired by their leader, they pressed on across the bridge with bayonets fixed and, notwithstanding the vastly superior force of the enemy and the tremendous fire of grape and musketry, took a second redoubt armed with many guns and filled with musketeers. At this moment Colonel Gibbs arrived with the grenadiers of the 14th, 59th and 69th Regiments, and captured another field-work, when a catastrophe took place, thus described by an eyewitness:—"A dreadful explosion took place in this redoubt by the blowing up of a powder magazine, which occasioned the loss of many lives. A great number of shells and rockets were fired by this means, and a sulphurous blast of mingled ashes, smoke, and fragments of every kind, broke upon us like a volcano, stunning all around, both friends and foes, blended together in a horrible state of fraternity. Colonel Gibbs and several other officers were thrown by the shock to a considerable distance, but fortunately without sustaining any material injury. This magazine is reported to have been fired by two Captains in the French service, named Muller and Osman, both of whom perished in the explosion. Here Brigadier Jauffret was taken prisoner by Colonel Gillespie in person." A last rally was made at Cornelis, but the enemy broke and fled before the onslaught of British bayonets. Colonel Gillespie, who had hitherto been on foot, mounted a horse which he cut from one of the enemy's guns, headed the Dragoons who had now come up, and by a fine charge dispersed the remainder of the defenders. He pursued them over fifteen miles, nearly half-way to the strong post of Buitenzorg. The flying foe attempted to rally at Campong Macassar, but the Cavalry charged in sections through the different avenues, and bore down all opposition. Gillespie with his own hand captured two Generals, and slew a Colonel in single combat. Eventually the whole French Army was destroyed or captured, and the Governor and Commander-in-

Chief, General Janssens, surrendered at a later date near Samarang. Java and its dependencies thus passed into the possession of the British, its comparatively easy conquest being greatly due to the skill and courage of Colonel Gillespie. Thus, as the Governor-General of India wrote in his despatch to the Secretary of State for War, "an Empire, which for two centuries has contributed greatly to the power, prosperity and grandeur of one of the principal and most respected States of Europe, has been wrested from the short usurpation of the French Government, added to the dominion of the British Crown, and converted from a seat of hostile machination and commercial competition into an augmentation of British power and prosperity.....Your Lordship will, I am sure, share with me the gratifying reflection, that by the successive reduction of the French islands and Java, the British nation has neither an enemy nor a rival left from the Cape of Good Hope to Cape Horn." With a generosity that was perhaps mistaken, Java was restored to the Dutch at the general peace of 1815. Had not politics thus nullified the results of war, this island, which, under British administration, would assuredly have prospered and not sunk into the obscurity which now surrounds it, might this day be one of the brightest jewels in the British Crown.

The brave soldier to whose ability, energy, and gallantry the successful issue of the Java expedition was mainly due, had still some work to do in the settlement of the island and its dependencies.

He was left in command of the garrison when the main force returned to India, and had to proceed with an expedition against the Sultan of Palimbang in Sumatra, who had committed many atrocities and had massacred the European colonists.

The expedition sailed from Batavia, immediately on receipt of the news of the massacre of the inhabitants of the Dutch factory at Palimbang, the force consisting of three companies 59th Regiment, five companies 89th Regiment, and some Madras and Bengal artillery and infantry, conveyed in four transports and escorted by seven ships of war.

The passage up the Palimbang river was made in boats, and after great difficulties, including the capture of the enemy's batteries at Borang, the force arrived, on the 24th April 1812, within 20 miles of the Sultan's capital. The latter fled on hearing of the approach of the British, abandoning his city to massacre and plunder. Repeating the tactics of Vellore, Colonel Gillespie, with wonderful intrepidity, accompanied

only by a few officers and 17 grenadiers of the 59th, left the main body on the 25th, and, travelling in canoes and boats, arrived at Palimbang after nightfall, the remaining troops having orders to follow expeditiously. An officer who was present gave the following account of the Colonel's arrival:— "Undismayed, in the face of numerous bodies of armed men, Colonel Gillespie boldly stepped on shore at eight o'clock at night, and with those who had accompanied him in the canoe and the seven grenadiers (these were in the leading boat) he marched with a firm step through a multitude of Arabs and treacherous Malays whose missile weapons, steeped in poison, glimmered by the light of torches. High battlements, with immense gates leading from one area to another, received our friends, and presented to them the frightful spectacle of human blood, still reeking and flowing on the pavement. The massy gates closed upon our rear, and the blood-stained courtyards, through which we were conducted, appeared as if it were the passage to a slaughter-house." Escaping attempted assassination by a Malay on the way, the Colonel passed on through burning streets to the palace, which "exhibited a melancholy picture of devastation and cruelty. Murder had here been succeeded by rapine; and while the place was completely ransacked, the pavements and floors were clotted with blood. In every direction spectacles of woe caught our sight, and rendered peculiarly awful by the glare of the surrounding conflagration, and vivid flashes of lightning amidst loud peals of thunder. The devouring flames which continued to spread destruction, notwithstanding the heavy rain which poured down in torrents, had now reached the outer buildings of the palace, and threatened the part where we had taken up our temporary abode. The crackling of bamboos, resembling the discharge of musketry, the tumbling in of burning roofs with a tremendous crash, the near approach of the fire, situated as we were in the midst of an immense hostile multitude and assassins, gave to our situation a most appalling prospect."

Colonel Gillespie barricaded all the entrances but one, and stationed a guard of grenadiers at the principal gateway. At midnight sixty men of the 89th Regiment arrived, and the remainder of the force joined in the early morning. By these bold and well-devised proceedings, the fort, armed with 242 pieces of cannon, was occupied without loss, the people being overawed by the intrepid bearing of the British Commander.

This expedition having been brought to a successful issue, the Commander of the Forces returned to Batavia, arriving there on the 1st June, only to leave at once for Samarang, where fresh work awaited him. The Sultan of Djoejocarta, due South of Samarang, was the head of a confederacy of princes of Java, whom he proposed to combine for the destruction of all the Europeans in the island. His residence and that of all his court was in an enclosure about 3 miles in circumference, surrounded by a broad ditch with drawbridges, and a strong rampart with bastions, defended by nearly a hundred guns. The Sultan refused to accede to terms that were offered him, but sent out strong bodies of horse to intercept the communications of the British Force before Djoejocarta. Colonel Gillespie, with a detachment of the 22nd Dragoons, rode out to reconnoitre the surrounding country, but was careful to avoid hostilities, notwithstanding the threatening attitude of the inhabitants. Towards evening the Sultan sent out a large body of troops with a flag of truce to demand the surrender of the British, and during the night the outposts in the Dutch town were attacked, as well as the picquets posted to keep the communications open on the road by which reinforcements were expected, whilst a party of Dragoons under Lieutenant Hales, sent out to join the relieving force, had to cut their way through multitudes of spearmen, losing six killed and having their officer wounded.

On the morning of the 19th June a reinforcement arrived, and preparations were made for an assault on the Sultan's stronghold, just before dawn on the 20th June three columns issued from the British quarters, escalated the walls, and after a fierce conflict which lasted three hours, captured the place and took the Sultan prisoner. The British had 23 men killed, and 9 officers and 67 men wounded. Colonel Gillespie, ever in the forefront of the fight, was severely wounded in the arm. The safety of the island was ensured by the success of this enterprise. The natives at Bantam, Cheribon, Sourabaya, and other places were ready to rise at the first signal. But the capture of Djoejocarta and its Sultan put an end to all fear of insurrection, and peace was now established on a firm basis throughout Java and all its dependencies.

Soon after these events Colonel Gillespie quartered with Stamford Raffles, the newly appointed Civil Governor of Java, and this led to his removal to the command of the Meerut Division with the rank of Major-General.

It was during his tenure of this appointment that the Nepal War broke out in 1814, and General Gillespie was given a command in the field. On the 31st October of that year an attack was made by the British troops on the fort of Kalunga in Dehra Dun, but the assault failed. Gillespie then tried to force an entrance at the head of a party of dismounted Dragoons, when he fell, shot through the heart, a fitting termination to his glorious career. His remains were carried to Meerut for interment, where for nearly a hundred years the blare of the trumpets he loved so well, ringing out each day across the plain, has sounded his solemn requiem. There in silence and in peace beneath the shadow of the cypress and the acacia, the gallant dead awaits the sound of a louder trump. "By the irony of fate, on the 10th May 1857, the first shots of the great Sepoy Mutiny were fired within a mile of the monument over his grave, and were the beginning of events that at one time threatened to involve British power in the East in ruin, and that have changed the whole course of Indian history. If that gallant spirit was still permitted to take interest in the events of that day, how it must have chafed at the exhibition of incapacity and indecision that led to such disastrous consequences. In view of what happened at Vellore, it is allowable to believe that the great Mutiny of 1857 would never have assumed the proportions it did, had the first outbreak been met by the same display of energy and resolution as was shown, under similar circumstances, fifty-one years earlier." ("The Nineteenth and their times.")

The great services of this gallant soldier received tardy recognition. On the 2nd January 1815, before the news of his death reached England, he was gazetted a K.C.B., whilst a monument to his memory, by Chantrey, was erected by the nation in that great temple of St. Paul's, where the illustrious dead are honoured. An obelisk was also put up to his memory at his native place.

The story of adventurous lives, such as that of Robert Rollo Gillespie, possesses more than a mere historic interest and value. Such examples form an incentive to valour and effort, and such men leave a lasting mark on the traditions of our army. Nor are the campaigns of a century ago wanting in lessons of both tactical and strategic value. The story of Vellore is a valuable example of the way to quell mutiny. The

manner of its suppression struck such terror into the ranks of disaffected sepoys, as to avert threatened dangers of a similar nature in other parts of the country. The capture of the strongly-fortified position of Cornelis proves how even the greatest obstacles may be overcome by a skilful and gallant leader.

coming in on flood tide opened a heavy fire on Russian guns at Su-Kia-Tun and silenced them in two hours. At 8-30 the fire of the forts at Nan-Shan slackened and the infantry by a series of rushes got within 500 yards of the Russian trenches. Beyond this they were unable to advance and the bombardment recommenced. The Japanese left wing near Yen-Kia-Tun which was exposed to a galling fire from the gunboat was now compelled to throw back its left flank to oppose the landing of troops from the transports to assist which the Russians reinforced their right.

Up to 5 P.M. there was no material change in the situation, the Japanese 3rd Division was suffering severely and barely able to hold its ground and the guns now began to run short of ammunition. The 1st Division was therefore ordered to advance but in spite of several attempts and heavy losses were unable to penetrate the Russian line.

At this critical moment the right wing of the 4th Division wading through the shallow water of Kinchau Bay succeeded in turning the Russian left flank and gaining the heights on the west.

This success encouraged the 1st and 3rd Divisions who swept forward irresistibly and by 7 P.M., the Russians were streaming away in full flight with the Japanese in pursuit.

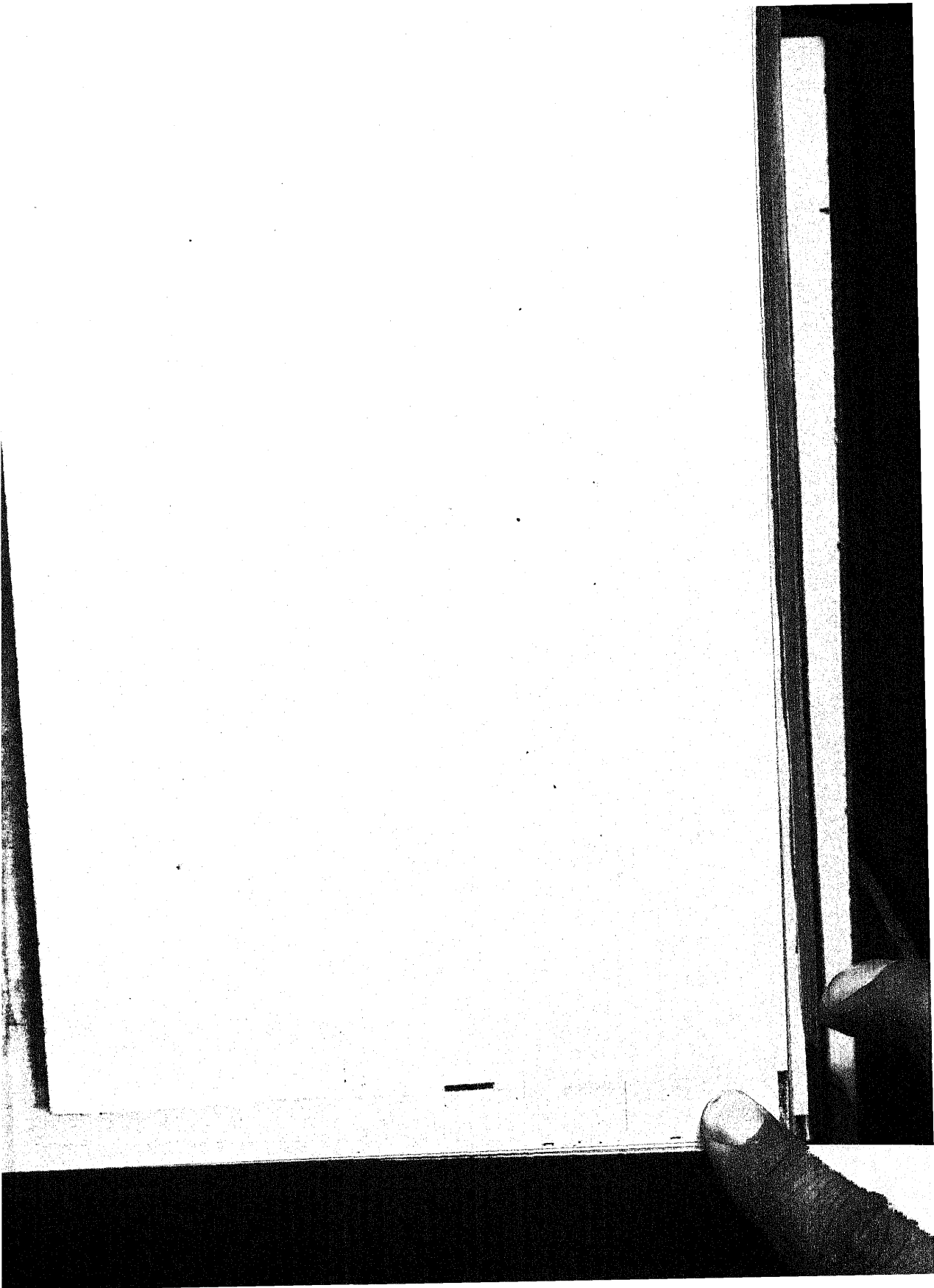
The columns of Japanese infantry which advanced in the short extension copied from Germany lost heavily (4,300 killed and wounded) as the nature of the ground compelled a frontal attack in formations which allowed of no lateral extension.

The Russians regarded their position as impregnable and omitted to prepare a second position to cover a retreat. The infantry clung to their trenches with desperate valour and here again as in the battle of the Yalu both sides realized that the bayonet was by no means an obsolete weapon. The Russian losses were about 2,000 killed and wounded and 78 guns.

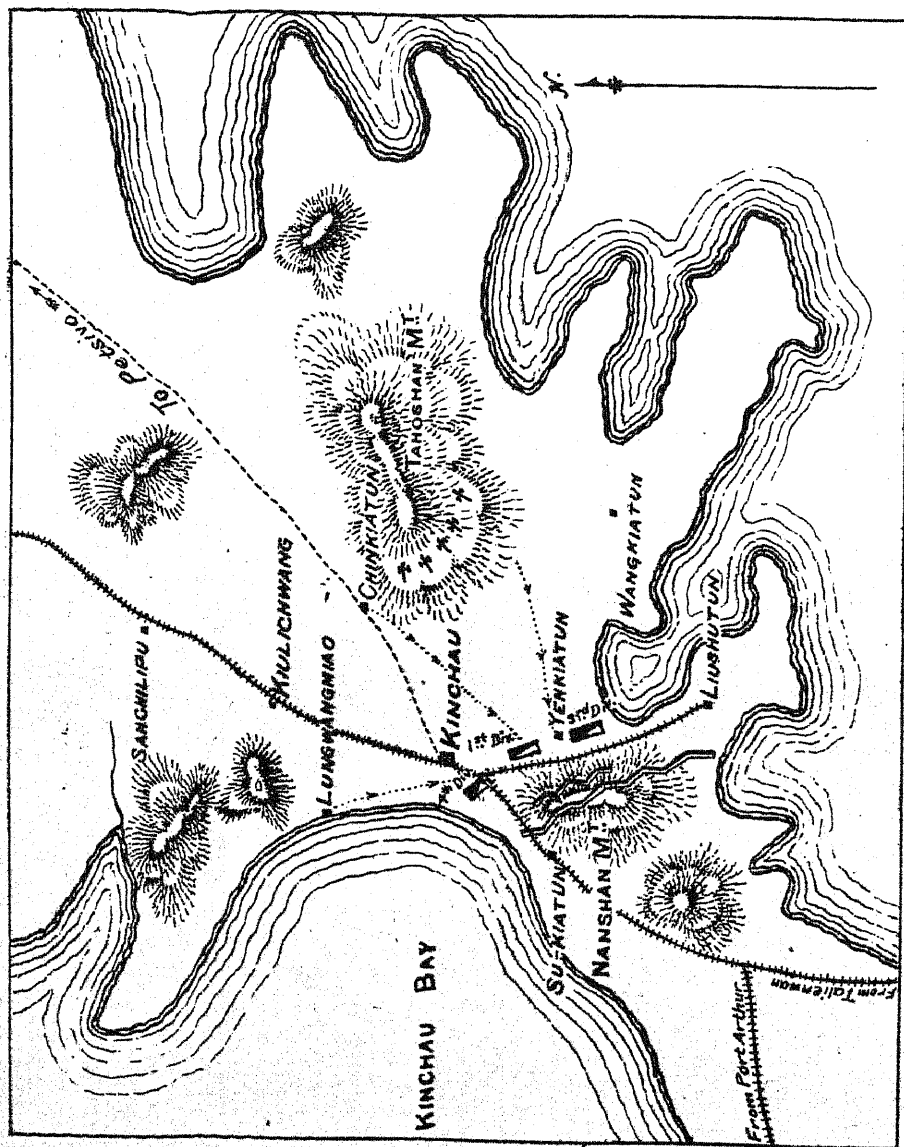
This battle affords a good example of the successful co-operation of naval and military forces.

On 30th May the Japanese occupied Dalny which now became the base for the forces on Liaoyang Peninsula.

On 8th June the 1st Japanese Army in conjunction with the 3rd Army (for whose advance they had been waiting) occupied Hsiu-Yen-Chou, a place of considerable strategic importance.



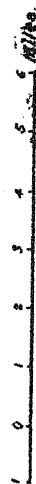
PLAN II BATTLE OF NANSHAN



REFERENCES

- Russian Position
- Japanese Position
- Japanese Line of Advance

Scale 20000 (Approx.)



RUSSO-JAPANESE WAR.

Captain Vincent states "The Russian defences were the most primitive order. The gun positions can hardly be said to have been protected at all. A little earth was heaped up round the guns, but no pits or cover of any kind for detachments. The infantry trenches along the base of the hill were plain breast-works of sods cut close in rear, reinforced with branches, with no attempt whatever at concealment or head cover, and offering little protection from sharpshooters. In a word the Russians at the battle of the Yalu failed to employ any of the ruses and artifices of war the use of which seems to come naturally to the Japanese."

The Russians retreated towards Feng-Huang-Chen followed by the Japanese cavalry. The main body with a sea base at Antung followed them up and on the 6th occupied this place.

On the 5th May the 2nd Japanese Army commenced disembark at Pe-Tsi-Vo and by the 9th had cut the rail line San-Chi-Li-Pu and isolated Port Arthur. On 19th May the 3rd Japanese Army under General Nodzu commenced to disembark at Taku-Shan.

On 15th and 16th May General Oku advanced and after some small skirmishes occupied all the hilly country north of Kin-Chau Isthmus which is barely 2 miles in width. On the high ground in the centre of it the Russians had erected 10 semi-permanent forts mounting 70 guns. These were supplemented by 8 machine guns and two Q. F. batteries. The slopes of the hills were lined with shelter trenches in tiers, below which were obstacles, the intervals between which were occupied by Q. F. guns. Their right flank was protected by a gunboat in the bay where two transports were in readiness to land troops to roll up the Japanese left flank.

By the 25th May the Japanese positions were as follows:—

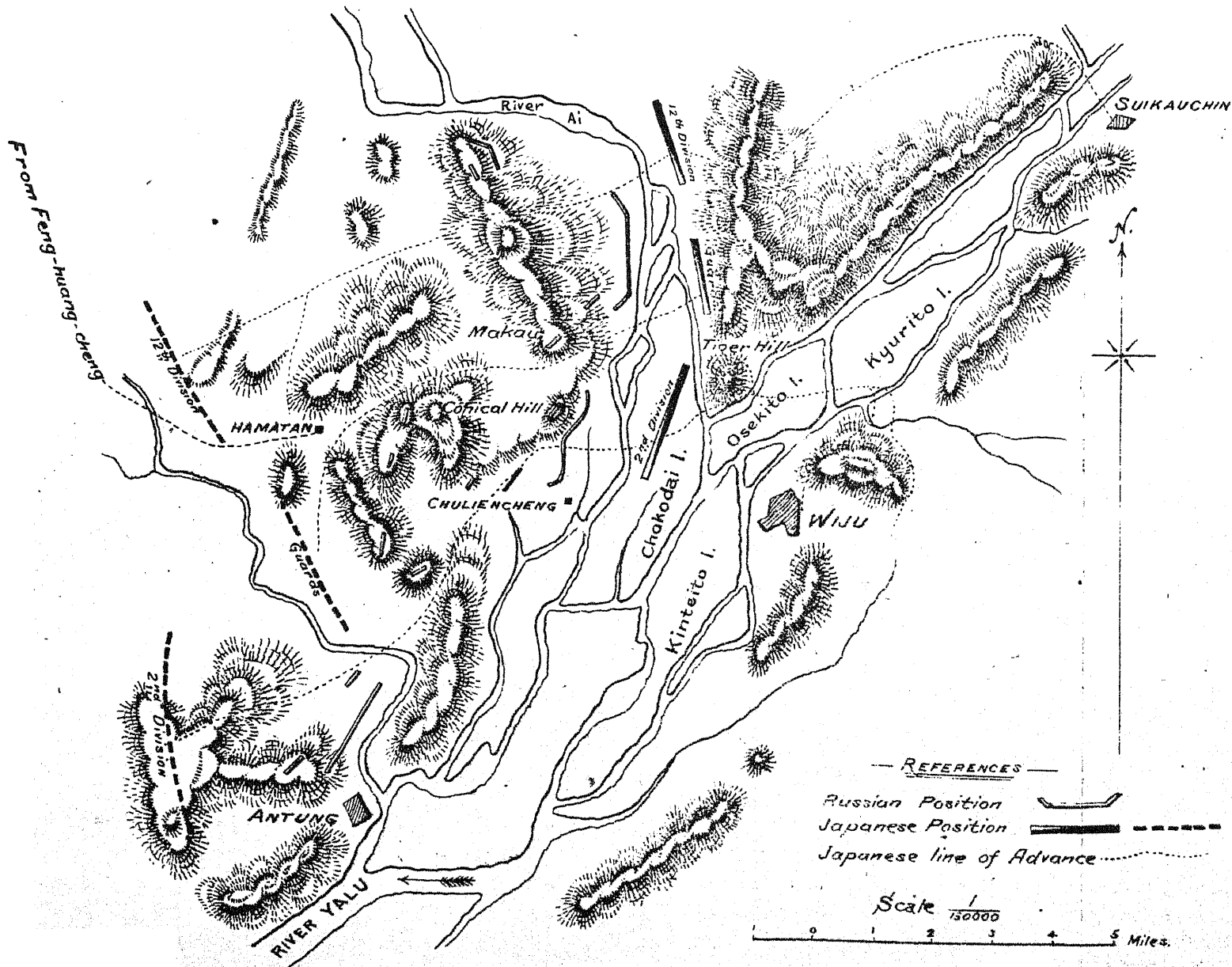
4th Division Lung-Wang-Miao, 1st Division Ching-Tun, 3rd Division extended from Wang-Kia-Tun to the coast (Plan II).

The whole of the artillery (108 guns) posted on the slopes of Ta-Ho-Shan was directed against Nan-Shan.

Battle of Nan-Shan. (See Plan II.)

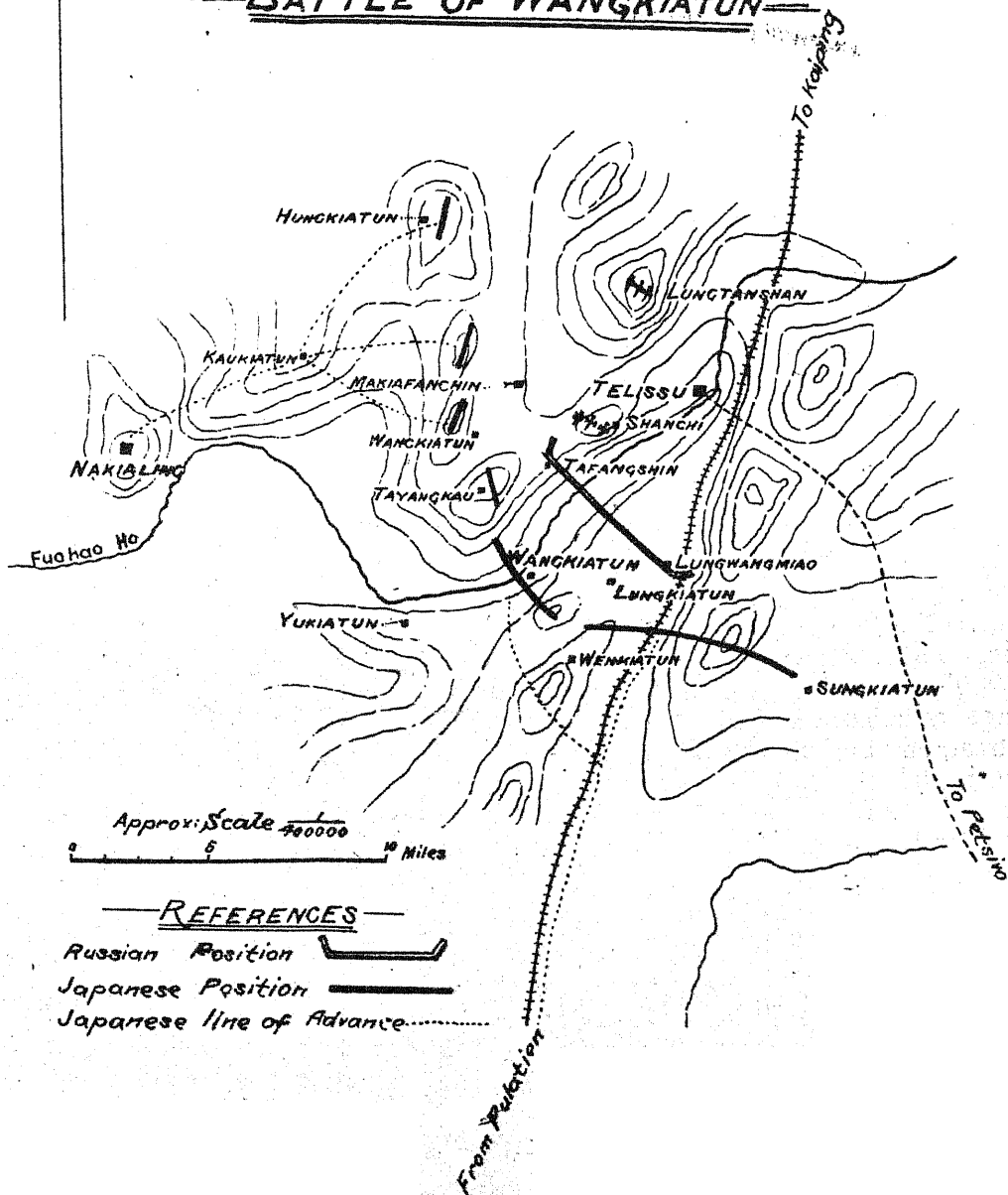
At day break on 26th May the artillery duel commenced on the right and centre of the Japanese being pushed forward to Kin-Chau. An hour later 4 gunboats and 4 torpedo

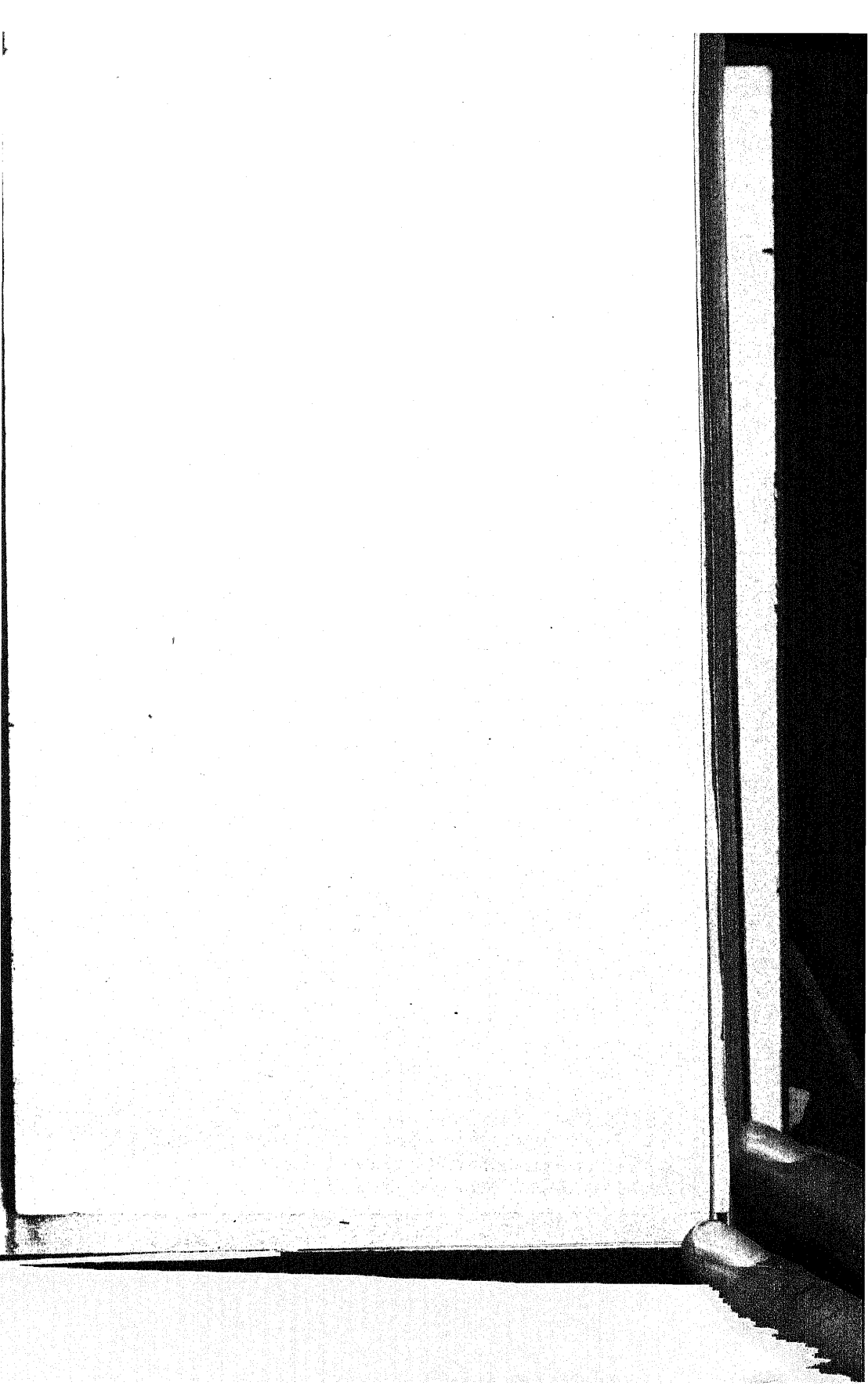
Plan I
BATTLE OF THE YALU



— PLAN III —

BATTLE OF WANGKIATUN





THE RUSSO-JAPANESE WAR.

BY MAJOR E. C. POTTINGER, R.F.A.

MOTTO :—*Virtus in Ardua.*

Essay adjudged first in Bombay Command Essay Competition.

Introduction.

Except where noted the following facts are derived from the "Times", "Pioneer" and "Battle of the Yalu"*. The operations of the navy are beyond the scope of this essay and are mentioned only in so far as they affect the army.

Outbreak of hostilities.

Japan demanded that Russia should evacuate Manchuria and after protracted negotiations diplomatic relations were broken off on 6th February 1904. War was not declared but on 8th February Japan seizing the initiative attacked and sank two Russian cruisers in Chemulpho harbour and the same night surprised and torpedoed three battleships in Port Arthur, these initial successes giving her command of the sea.

Plan of operations.

The strategic plans by which each combatant hopes to bring the war to a successful conclusion must of necessity be a matter of conjecture, the following points are however evident :—

- (i) A Japanese army landing on Korean coast to enter Manchuria by forcing passage of Yalu. This army having as its objective Harbin (a place of supreme strategic importance) would be required to inflict as much damage as possible on the Russian forces before they could be fully reinforced from Europe, and capture from them the railway connecting Port Arthur with the Trans-Siberian.
- (ii) The investment and reduction of Port Arthur.
- (iii) A blockade and possibly future investment of Vladivostock.

Russia's preparations being incomplete her objects were—

- (i) To gain time till reinforcements could be brought from Europe for which purposes she had constructed three main lines of defence to delay the

* Communicated by I. B., Simla.

Japanese; the first round Liaoyang, the second along the watershed from Kai-Ping through Mo-Ti-en-Ling, the third the Yalu River.

(ii) To hold fortified harbours of Port Arthur and Vladivostock.

(iii) When sufficiently reinforced to take the offensive and drive the Japanese from the main land.

Strength of Russian forces.

On outbreak of hostilities, the Russian forces in the Far East were approximately:—

Infantry 140,000, cavalry 22,000, artillery 17,000 with 520 guns—total 179,000.

Landing of Japanese troops.

The transport of troops was conducted with great secrecy and the 12th Division occupied Seoul before the end of February. They then marched to Chinam-po to cover the landing of the Guards and 12th Division who had embarked on 1st March. These three Divisions numbering 55,000 infantry, 4,500 cavalry with 180 guns formed the First Japanese Army under General Kuroki.

On 25th March the advanced guard reached Anju and by 30th April this army occupied the southern bank of the Yalu from Yongampo to 10 miles above Wiju a front of 30 miles, with a secure base near mouth of the river.

The Russian force under General Sassulitch detailed to oppose the crossing consisted of 15,000 infantry, 5,000 cavalry and 60 guns distributed from the mouth of the Yalu to Suikauchin.

On 25th and 26th a small Japanese flotilla ascending the Yalu shelled the outposts near Antung, which led the Russians to believe that the main attack would be made in that neighbourhood, consequently they kept the majority of their troops at Antung and Chuliencheng with the main reserve at Hamatan.

On the 26th the Japanese captured the Islands of Kyurito, Osekito and Kinteito and commenced building bridges. On the morning of the 30th the artillery of the 2nd Division and five four-gun howitzer batteries, all of which the previous night had taken up a position on Kinteito, engaged the Russian guns which they silenced in about 30 minutes. Under cover of this fire the 12th Division which had built a bridge at Suikauchin crossed the Yalu and took up a position on a ridge to the east of the Ai river.

The same night the 2nd Division occupied a line on Chokodai I, while the Guards Division who followed them filled the gap between them and the 12th Division.

Five battalions and five squadrons formed a reserve at Kyurito.

Battle of Yalu (see Plan D).

At 7-0 A.M. on 1st May the Japanese artillery opened fire and an hour later the Infantry extended on a front of nearly 7 miles advanced simultaneously. Forging the Ai river within 500 yards of the Russian entrenchments they suffered considerably but by 9-0 A.M. had reached the opposite bluffs and captured the position.

The Russians tried to cover their retreat by holding the left of their position and a hill due west of Chuliencheng but by noon began to evacuate this hill. The Japanese reserves who had come on to Conical Hill were launched against them and a general pursuit ordered. Meanwhile one company from the 12th Division worked its way round to the north of Hamatan and held the Russians till reinforcements came up.

The position at Hamatan offered no facilities for defence and the Russians who were huddled up at the bottom of a valley subject to a murderous fire from the surrounding heights surrendered at 5-0 P.M.

The Russian losses in the two days' engagement were 2,327 men, 21 field guns and 8 maxims, the Japanese casualties being less than 1,000.

The skilful disposition of the Japanese over a front of 30 miles enabled them to deceive the Russians as to the point of the main attack and prevented the latter gaining information of the presence of the howitzers which came as a complete surprise to them.

The Japanese made a frontal attack most of which was across an open plain with no cover, their small losses are due to the assistance they received from the artillery fire which being partly frontal and partly enfilading made the Russian trenches untenable.

The Russian position taken section by section was strong but had no depth, so that if any section gave way there was no possibility of remedying the disaster which must ensue and no second position was prepared to cover a retirement. The reserves were so placed that they were not available as reinforcements during the actual fighting for the passage of the river.

On 13th June General Oku advanced from Pu-La-Tien against a Russian force moving south towards Port Arthur. His main body was detailed to hold the Russians in the neighbourhood of Telissu while a detached column outflanked them on the west.

The Russians who were posted in great strength between To-Fang-Shin and Lung-Wang Miao (*see plan III*) anticipated a frontal attack only, such as the exigencies of the ground compelled the Japanese to make at Nan-Shan.

On 14th June the Japanese artillery on the heights Yu-Kia-Tun to Sung-Kia-Tun bombarded the Russian position for two hours without much result. During the night under cover of darkness the Japanese centre advanced to Ta-Yang-Kau the column on the left having meanwhile reached Na-Kia-Ling. The troops on the right were ordered to extend from Wen-Kia-Tun to Sung-Kia-Tun and hold their ground.

Battle of Wang-Kia-Tun. (See Plan III).

At 5-30 A.M., on the 15th June 1904 the artillery duel commenced and three hours later the Japanese centre under heavy fire from guns near Shan-Chi, advanced against the Russian right and soon received assistance from the left wing whose flank attack now began to develop.

This left wing on reaching Kau-Kia-Tun advanced in three columns, one to Hung-Kia-Tun to cut off the enemy's retreat, one against Wang-Kia-Tun in prolongation of the centre and one towards Ma-Kia-Fang-Shin to menace the enemy's rear. To check this movement the Russians planted guns on Lung-Tan Shan which aided by those at Shan-Chi harassed but did not stop the advancing line. Meanwhile the Russians attacked with vigour the Japanese right to which a purely defensive rôle had been assigned. They were twice strengthened from the reserves, nor was the pressure relieved till the cavalry riding in from Pe-Tsi-Vo road threatened the Russian left rear.

The Japanese now in turn assumed the offensive and at 3 P.M. the Russians, attacked in front and on both flanks, retired in confusion on Kaiping. The Russian losses including prisoners were estimated as 7,000 to 10,000 with 14 guns, the Japanese lost 1,163 killed and wounded. General Oku's army consisted of 3 divisions and a cavalry brigade opposed to which the Russians had 30 battalions, a cavalry brigade and the artillery of three divisions. A British officer

who was present reports " My impressions are practically confined to the awful effects of artillery which forces infantry to deploy at 4 miles, and once it gains superiority of fire mows all opposition down. I shall never forget the Russian batteries in the centre being silenced ".

General Stackleberg's force was crowded on a narrow front in a position which invited an enveloping movement on both flanks, and as the Japanese attack developed, the confined position of the Russians became the target for a converging fire.

On 26th June the 3rd Japanese Army commenced operations against Feng-Shui-Ling occupied by 2,000 Russians who had erected semi-permanent fortifications. Moving on a front of 20 miles the Japanese outflanked the position and captured it with a loss of 170. An attempt of the Russians to retake it was repulsed. On 30th June the Japanese occupied Mo-Tien-Ling without fighting, on 4th July under cover of a thick fog the Russians made three desperate attempts to recapture this position but were repulsed. The same day the Japanese occupied Taling. On 6th July General Oku advanced against Kaiping which was captured on the 9th with a loss of less than 200 men.

Heavy rains now delay operations.

At the end of June Marshal Oyama was appointed Commander-in-Chief of the Japanese forces in Manchuria which are now distributed as follow :—

1st Army under Kuroki with base at Antung (*see Plan V*) occupies Mo-Tien Pass with their right flank near Tai-Tse-Ho.

2nd Army under Oku with base at Dalny occupies flat country from sea towards Feng-Shui-Ling.

3rd Army under Nodzu with base at Taku-Shan filling the gap between other armies occupies the hills overlooking the plain east of Hai-Cheng.

On the 13th July the Japanese occupied Ying-Kau which now became the base for 2nd Army.

On 18th July Kuroki advanced against Hai-Ho-Yen on Liaoyang road where Russians had constructed strong defensive works. The main force bombarded the position on morning of 19th and by evening gained the heights to the north-west of Hsi-Ho-Yen, meanwhile a flanking party which had been sent *via* Moen-Ti Pass cut into the Russian line of retreat. The Japanese casualties were about 520, the Russians about double this number.

Although but a small engagement it is important in so far that the Japanese for the first time abandoned the German formation which was found to be too costly and adopted a more extended line.

Battle of Ta-Shih-Chiao.

On 24th July 1904 Oku commenced an attack on the Russian position covering Ta-Shih-Chiao. This extended for 10 miles from east to west and was held by 5 divisions and 100 guns posted in strong defensive works. During the day the battle consisted of an artillery duel, the advantage resting with the Russians. When night fell the Japanese infantry pushed forward and at 10 A.M. rushed the first line of trenches near Ta-Ping-Ling. Successive attacks were made through the night and by daybreak the Japanese had captured all the heights overlooking Ta-Shih-Chiao, which was burnt and evacuated by the Russians the same day. The Japanese casualties were 1,070 the Russians being double this number.

On 30th July a general advance was made by right and centre of the Japanese line resulting in two separate battles.

Battle of Ku-Shu-Lin.

(Yang Tzu-Ling.)

Two divisions of the Russians with corresponding artillery took up a defensive position at Ku-Shu-Lin which Kuroki attacked on 31st July. By evening the Russian flanks were both driven back but the centre held their ground. The next morning the attack was resumed and the position captured by noon, the Russians retiring to An-Ping. At the same time as above Kuroki attacked 2½ divisions and 4 batteries of Russians at Yang-Tzu-Ling, a stubborn resistance was offered and the position was not carried till the next morning, the Russians retiring on Ta-Ho-Yen.

The Japanese losses were 946, the Russians probably over 2,000, with 2 field guns and 268 prisoners.

Battle of To-Mu-Chan.

On 30th and 31st July 1904 the Japanese successfully attacked the heights to the north of To-Mu-Chan which had been strongly intrenched by the Russians and compelled the latter to retire on Hai-Cheng. The Russian force which consisted of 2 divisions and 7 batteries lost about 2,000 men

and 6 guns. No details are given of the Japanese force which was probably part of Nodzu's army, beyond that their losses were 860. On 2nd August the Russians evacuated Hai-Cheng retiring on An-Shan-Chan, the former place and Niu-Chuang were occupied by the Japanese the following day.

Against the Russian concentration at Liaoyang the Japanese plan of operations was as follows:—

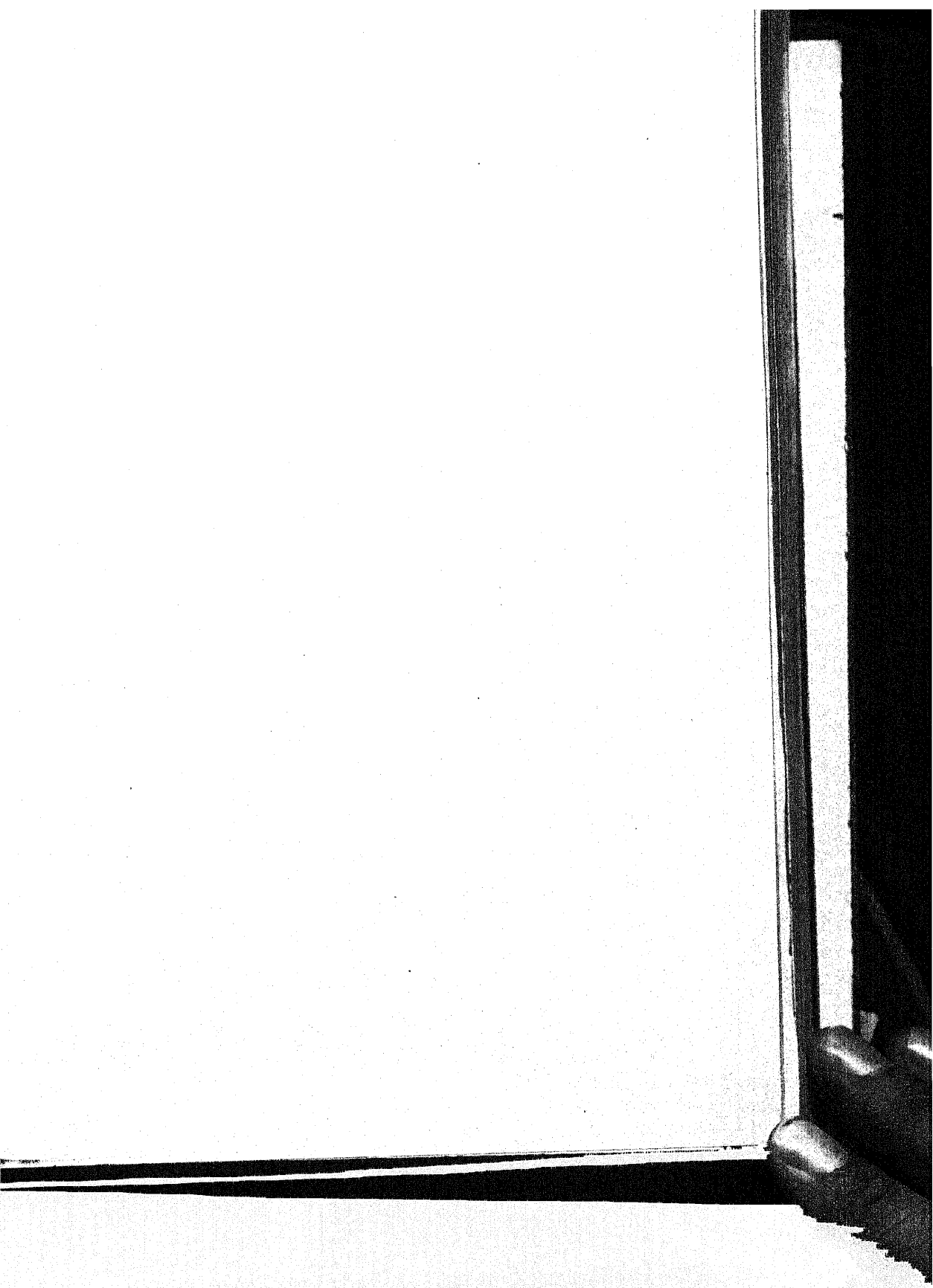
Oku on the left with 3 divisions and Nodzu in the centre with 2 divisions were to close in on Liaoyang from the south and south-east while Kuroki's Army of 3 divisions were to work round the Russian left flank and endeavour to get astride of the railway north of Liaoyang and cut their line of communications.

Kuropatkin anticipating this move detailed sufficient troops to hold in check the 2nd and 3rd Japanese Armies, while with the bulk of his forces he hoped to overwhelm Kuroki.

On 23rd August 1904 the Russians were holding a chain of outposts from An-Shan-Chan by Kao Feng-Shu to Hung-Sha-Ling and thence to the Tai-Tse-Ho. (*See Plan IV.*)

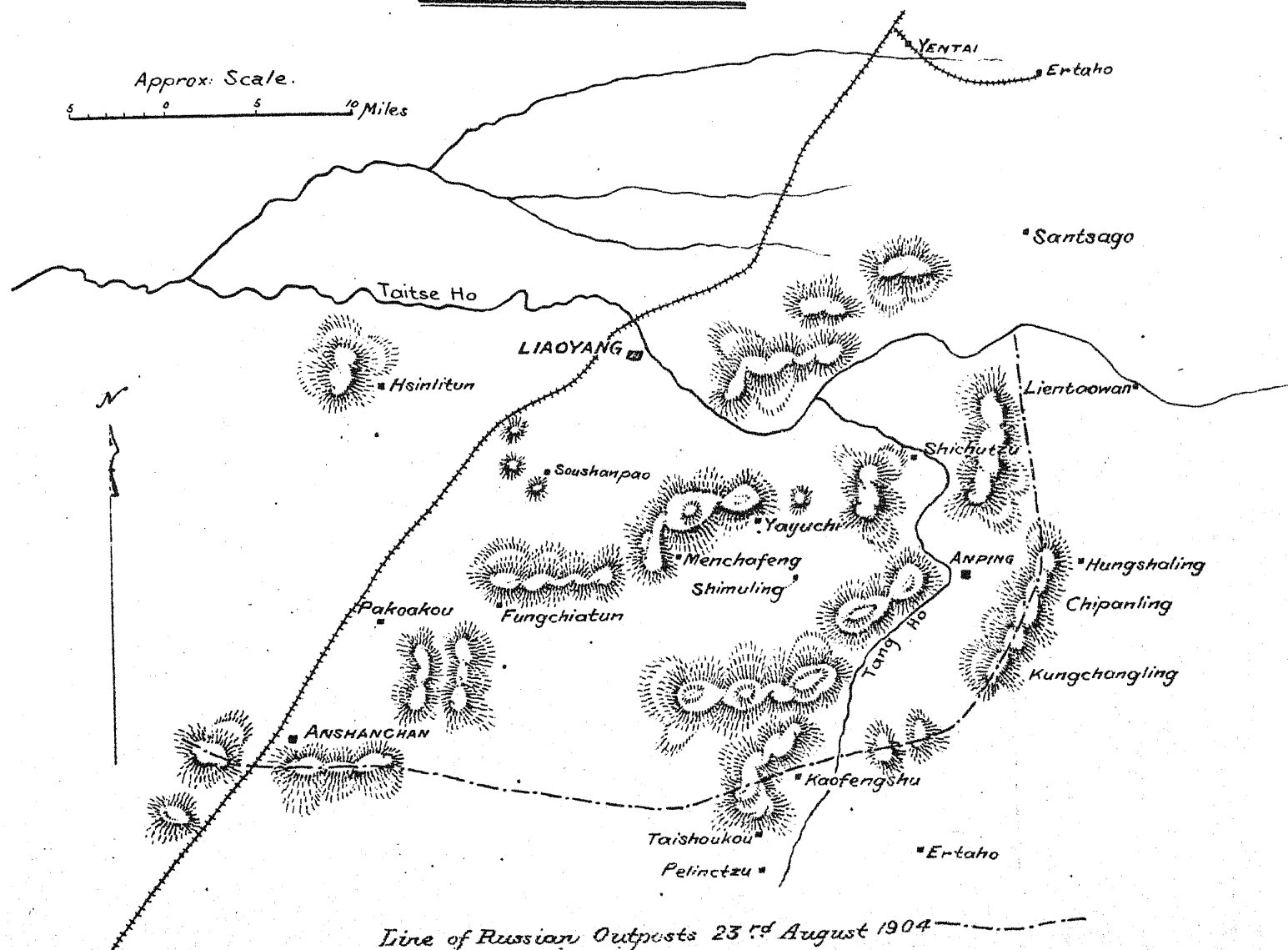
On this date Kuroki commenced to attack and by the 26th had driven a wedge into the centre of the Russian left but as the wings held firm and the Japanese were assailed in increasing numbers they could barely maintain their ground. The Japanese continued the attack on the 27th and by nightfall had captured all the positions east of Tang-Ho. On the 26th the 2nd and 3rd Japanese Armies advanced on An-Shan-Chan the Russians gradually falling back to their main position consisting of 3 lines the first of which was a line of small hills at right angles to the railway 6 miles south of Liaoyang. The Russian rear guard had successfully accomplished its task and Oku was unable to attack this main position till the 29th. During the night of 29th-30th the 2nd and 3rd Armies brought up the rest of their artillery and at dawn opened a severe fire on the Russian position which lasted all day. At dusk the infantry who had deployed under cover of standing millet assaulted but were repulsed with considerable loss. The 1st Army which had crossed the Tang-Ho the previous day joined in this general assault and the same night sent two columns across the Taitse-Ho near Lien-Tao-Wan.

At 2-0 A.M. on the 31st the 2nd and 3rd Armies again assaulted and were again repulsed. The day was spent in an artillery duel, the Japanese reserves being brought up to the front. Towards evening the Japanese artillery began a



—PLAN IV.—

—BATTLE OF LIAOYANG—



rapid fire preparation of the whole position taking it in sections and an hour later the infantry were launched against the position in a general assault for the 3rd time in 24 hours. Everywhere the assault had failed but the order came to re-inforce and assault again before daybreak. Kuroki had, however, reached as far as Santsago and was moving towards Yentai thus turning the left of the Russian position which was evacuated the same night.

The battle is remarkable for the persistency with which the Japanese infantry time after time made frontal assaults on strong positions in spite of heavy losses. Their losses were about 25,000, the Russians considerably less. The Japanese armies are estimated as being less than double the strength of the Russians and although they were unable to cut off the line of retreat by the railway, the Russians were unsuccessful in their attempt to destroy the 1st Army.

No mention has been made of the siege of Port Arthur. We know that several assaults have been made and that after severe losses the Japanese have gained some of the outlying forts but without further details it is impossible to draw any military lessons from these operations.

Summary.

Up to the end of August the Japanese armies have advanced as far as Liaoyang. Port Arthur still holds out, the Russians have withdrawn their forces and delayed to some extent the Japanese advance without incurring any irreparable disasters but the advantages of the campaign up to date are with the Japanese and are due to better training, leading, generalship, initiative, organisation and determination to do or die.

Strategy.

This war exemplified the following strategic lessons:—

- (i) The enormous advantage possessed by the power which had command of the sea particularly when the theatre of operations has an extensive sea-board.
- (ii) The disadvantages of a long single line of railway as the only means of communication with the base.
- (iii) The necessity for mobile transport to move troops laterally from main lines of communications.

The Japanese being able to operate considerably further from their sea bases than the Russians from the railway, this too in a mountainous country with but few roads.

- (iv) The value of fortified harbours even when the command of the sea is lost.

The importance of Port Arthur to both belligerents is due to its being the only ice free naval base Russia has in the east, should it fall she cannot hope to regain command of the sea during the war even were her Baltic Fleet in Far Eastern waters. As long as the garrison holds out the majority of the Japanese Navy and a large land force are employed in the siege and blockade all of whom might otherwise be utilised in furthering the present land campaign or causing a diversion in the direction of Vladivostock.

- (v) While the Russians held the mountain passes east of Hai-Cheng the Japanese armies were extended over a front of 100 miles the various fractions being separated by mountains with but few and bad lateral communications. Kuropatkin seems to have missed an opportunity in not attacking them in detail but presumably after being defeated in the opening battles of the campaign he considered his forces too weak to attempt any offensive movements.

Tactics.

Tactical lessons may be deduced from the following points:—

- (i) An attack on a defensive position cannot be successfully carried out without considerable losses. Half hearted measures are worse than useless and an attack when once commenced must, in spite of temporary reverses and severe losses, be vigorously prosecuted as long as there is still hope of success.

- (ii) The Japanese whenever ground permitted attacked from the front and both flanks, not by extending from the centre and trying to feel round the

flanks (a manœuvre which allows the enemy on interior lines to change his plans accordingly) but by columns previously detached, who were in a position ready to operate as soon as the frontal attack commenced.

- (iii). The Japanese Infantry in the attack have latterly moved in a more extended formation, had they been as widely extended as is usual with our infantry it is doubtful whether they could have hacked their way through obstacles.
- (iv). The Russian defensive positions were as a rule overcrowded.
- (v). The necessity in rear guard actions of falling back to a series of defensive positions instead of holding out too long in one position.
- (vi). The value of the study of the theatre of war previous to the opening of hostilities. Without good maps and a thorough knowledge of the country it would have been impossible for the Japanese armies to move and act in such complete tactical unison when operating on a front of 100 miles.
- (vii). The Japanese have made great use of night attacks and night marches to get into position at dawn and as far as is known always with success.
- (viii). The full use of spade and pick and the value of ruses were neglected by the Russians at the beginning of the campaign.
- (ix). The mobility of the Japanese to a great extent depends on their transport arrangements. Operating in a mountainous country with but few roads the difficulties must be very great. A detailed study of their Transport Department in which ponies, mules and coolies are all used both for pack and draught purposes would doubtlessly furnish some useful lessons.

As regards artillery—

- (i). The value of the field howitzer was demonstrated at the battle of the Yalu and again at Liaoyang.
- (ii). The artillery duel is still a prelude to all large battles and the army whose artillery can silence the enemy's guns immediately gains an enormous advantage. (See report on battle of Wa-Fang-Kau).

- (iii). Artillery are called on at times to sacrifice themselves for the benefit of the other arms, and must be prepared to take all risks. But any battery attempting to move in the open within medium range of quick firing guns must expect to be put out of action. The importance of cover to artillery in the attack is as great as when they are on the defensive
- (iv) The Japanese carry 20 per cent of high explosive shells with their field guns but further details of their effect are required before their value is proved.
- (v) The "Times" correspondent mentions "hand howitzers" having been brought into the firing line at Liaoyang. This is apparently a new and unknown weapon.
- (vi) In all the battles the Japanese artillery have been handled with great tactical success especially in their method of concentrating fire on successive posts of the enemy's position.
- (vii) Guns which are over-matched in the preliminary artillery duel must be withdrawn before they are put definitely *hors de combat*.

No details have been received as to the action of the cavalry with either army.

Finally the personal element.

The Japanese have been described by correspondents as the finest infantry in the world and their persistency in assault after continuous fighting and severe losses has won the admiration of all soldiers.

"The Russian soldier despite valour and resignation is inferior to the Japanese in discipline and what is still more important fights with indifference under compulsion, whereas with the Japanese this is a war for an idea which penetrates all from minister to husbandman".*

Whether this letter is authentic or not, the sentiment is probably near the truth.

When the time comes for the Japanese to fight on the defensive their courage is not likely to fail them, but when the Russians have to take the offensive, will they show the reckless gallantry and dash that have been so conspicuous in the Japanese?

* Reported letter from Russian Staff Officer published in *Osvobodhdenie*.

MOBILITY.

BY MAJOR J. C. RIMINGTON, R.E.

The late Boer war was responsible for teaching us many lessons in regard to the advances of military science and the altered conditions of warfare caused thereby and, although all these had been foreseen and foretold by thoughtful soldiers, yet the innate conservatism of the British army had refused to admit the necessity for any changes. Strong arguments had been brought forward by these clear-sighted individuals to prove that in consequence of the enormous improvements in arms of precision, radical changes in our battle training were necessary, that parade-ground movements under fire had become impossible and that the highest training of the intelligence and daring of the individual must supplant the soulless movements and lack of initiative of the over-drilled soldiers; yet our military authorities, imbued with the old-fashioned ideas, would have none of these ideas of reform. There were, however, I believe, some regiments in the Indian Army who of their own initiative had begun to move in the right direction and even before the war were training their men in tactics suited to meeting a well-armed foe.

The Boer war quickly dispelled all illusions on the subject and caused us to grasp the new conditions. The cardinal points that were impressed upon us were the increased power of the rifle, the value of cover, the difficulties of reconnaissance, the reduced effect of the shock action of cavalry, the moral effect of artillery fire, and the apparent advantage conferred upon the defensive by the improvements in firearms. The official recognition of these altered conditions and the improved system of training necessitated thereby, as embodied in our latest text-books, has placed our army in a leading position amongst civilized troops, as a force practically trained in actual war tactics.

It is true that even now there are those who contend that we have gone too far in our deductions from a war in which we were confronted by an army of irregulars, and who say that, should we be pitted against European troops, we should suffer for our adoption of extreme extensions, the instruction of our men in the use of cover, the dispersion and concealment of guns, and so on. It is not my purpose to argue these points here, as they are being continually discussed, and I would leave them in abler hands. I would merely remark that, in my humble opinion, if men are taught intelligently the

value of extended movements, the use of cover, etc., they will be all the better trained and better disciplined for their work, when the exigencies of the situation compel them to move in closer order and afford little scope for the intelligent use of cover: in other words, if men are trained to the highest standard they can the more easily adapt themselves to a lower one. There is, however, one lesson of the Boer war which, it has constantly struck me, we have not fully realized; and this is the more remarkable, since it is to be derived from the factor, which, to my mind, contributed more than any other towards giving the Boers the powers to stand up against us, to defeat our armies and to prolong the war for many months after their main forces had been dispersed. That factor is mobility.

Some people may contest this conclusion and maintain that it was in marksmanship that the Boers excelled. From the evidence given before the War Commission, however, it would appear that the general opinion of our senior officers is that the average shooting of the Boers was little above that of our men. Now, in the 1870 war, the French armed with the Chassepot had certainly the advantage in shooting over the Germans who used the needle gun, yet this was not a decisive factor in the war; in the same way the Boers, deprived of their mobility, could never have stood against the forces we brought against them even had they been twice as good marksmen as they were. Take away their horses from them and how would they have fared in their invasion of Natal, even against the 12,000 to 15,000 men who faced them at the outset? Who could have believed that a highly-trained and well-organised force of 12,000 British troops could have been shut up and reduced to absolute impotence by a force of irregulars only slightly superior to them in numbers? How could the Boers have maintained the siege of Ladysmith and resisted Buller's army on the Tugela at the same time, had not their great mobility given them the power of always being able to concentrate in force with the utmost rapidity whenever their defensive line was threatened? Note, too, how when our troops were first advancing to the relief of Ladysmith, the mobile Boer commandoes were able to encircle each detached body in turn: so that whilst White was beleaguered in Ladysmith, Hildyard was surrounded at Estcourt and Burton practically the same at Mooi River, and yet in neither case could our troops strike decisively at their mobile enemy. Later on in the war it was this mobility that caused us so

many "regrettable incidents" and made it so difficult for us to put a stop to the depredations of the Boer guerilla leaders.

Finally it was only by meeting mobility with mobility and by the wise measures taken to lessen and obstruct their mobility, that we were able to compass the final subjection of the Boers. But great as were the results gained by the Boers from this trait of theirs, there can, I think, be little doubt that had their forces been wielded with a more comprehensive and definite strategy, the results would have been far greater. If, instead of using this great element of power in detached efforts, they had adapted it with more singleness of purpose to a carefully thought-out strategic plan of campaign how much more effective would it have been! For instance, had Louis Botha's advice at the Krygsraad on the 24th November been taken and the commandoes south of the Tugela pressed on united against Pietermaritzburg, how altered would have been the situation. Buller's relief army would have been severed in two and the advanced portion would have had its communications cut and all its supplies stopped. In Lord Roberts' march *via* Kimberley on Bloemfontein, the Boers gave us one specimen of the strategic value of their mobility in the capture of the convoy of 180 wagons at DeKiel's drift, but, fortunately for us, they did not see what potentialities that mobility embraced. Had they collected an army of 20,000 or 30,000 men and, refusing to be drawn into a general engagement, had they contented themselves with crushing detached bodies, cutting off supplies and harassing our lines of communications, how would Roberts' army of 34,000 men, dependent as it was entirely on its supply train, then have fared? Even as it was the capture of this one convoy of 180 wagons out of a total of 600, threw it on short rations and any further depletion of its supplies would have jeopardised its existence. It is a subject well worthy of deep reflection, how we should have been able to carry on our invasion, had the Boers confined themselves to acting in strength against our communications.

We must not, however, confine ourselves only to the Boer war for our deductions concerning the value of mobility. That war looms large in our eyes, because it is the most recent and one of the most obstinate, in which we have ever been engaged; but we must also remember that its conditions were quite exceptional and altogether different to those which would face us in a conflict with European troops.

Let us turn to other cases in history and we shall find that mobility has been sought for by every great commander, because it gives him all the advantages of the initiative and allows him to concentrate superior numbers against his slower-moving opponent and so probably to defeat his forces in detail.

The study of Napoleon's campaigns will show how much he depended for success on the energy and rapidity of his movements; how he would hurl himself suddenly on one of his opponents and destroy him and then turn quickly on the other. It was one of his guiding principles always to take the initiative and then when his opponents were hesitating, doubtful where the blow would fall, by his rapid concentrations and marches he would defeat them in detail. From his first campaign in Italy in 1796 when he detached the Piedmontese first and then defeated the Austrians, until his last in 1815 when he burst across the Belgian frontier and had defeated Blucher before the surprised Allies could concentrate to meet him, this rapidity of movement and energetic initiative, with a very few exceptions, characterised all his operations. Some of his own sayings will show how highly he valued mobility. Colonel James in modern strategy quotes his favorite motto "Activité, Activité, Vitesse." Colonel Yosch von Wartenburg recalls others: "I may be accused of rashness but never of slowness." "In war he only knew of three things: 'to march daily thirty miles, give battle, and then bivouac in peace'"; "strategy is the art of making use of time and space: I am less chary of the latter than of the former: space we can recover, lost time never." This writer also says: "what more especially strikes us in Napoleon's strategy during this time is the rapidity of his movements: that rapidity which Jomini compared to lightning and which led the French soldiers to remark in 1805: 'The Emperor has invented a new method of waging war; he makes use of our legs instead of our bayonets.'" To investigate thoroughly the bearing which mobility had on the success of Napoleon would require much more space than can be devoted to it in an article of this description and it must be left to the reader to study for himself.

Coming down to more modern times, Stonewall Jackson's campaign on the Shenandoah valley is an excellent example of the value of mobility.

Again it was mobility in 1870 that enabled the German armies to encircle Bazaine's army at Metz, and later on to crush the illfated Macmahon's force at Sedan.

The above are all examples of the advantage of the comparative mobility of forces composed principally of infantry, but they do not include specimens of that superiority of movement which I wish particularly to emphasize, *viz.*, the mobility of the mounted man.

There are of course many instances in European warfare where the action of cavalry has had brilliant and far-reaching effect: as, for instance, in von Bredow's famous charge at Rezonville, when by sacrificing his brigade he gave the Prussians time to bring up fresh troops and check the overwhelming masses of the French, and thus assisted in closing the mouth of the trap, which eventually effected the doom of Bazaine's army; or again at Eylau, when Napoleon's army was broken in two by the annihilation of Angereaw's corps, the day was saved by hurling Murat with his cavalry on the victorious Russian columns, thus restoring the French line until Davout's flank attack began to take effect: or at Marengo where Kellerman's cavalry threw themselves impetuously on the flank of the great Austrian column while Desaix dashed with his corps at its head, thereby turning disaster into victory: or again at Dresden in 1813, which was a great day for cavalry, as the pouring rain had soaked the ammunition of the allied infantry to such an extent that they could not get their muskets to go off, and they thus fell an easy prey to the French cavalry. These incidents however exemplify more the tactical employment of cavalry and give us little information regarding its strategical value, except that in the first instance given, the tactical action had undoubtedly great strategical effect.

No one had a keener appreciation of the value of each arm than Napoleon, and although he doubtless employed huge masses of cavalry * and made great use of them tactically, yet, inas-much as the cavalry of that day were not self-contained and could not act independently without infantry, he never utilized them for any great strategical strokes.

* Petit Narbonne says that under Napoleon the numbers of Cavalry were one-fifth that of the Infantry.

During the Napoleonic era the only cavalry that were, or could be, used strategically were the Cossacks; these irregular horsemen owing to their being trained to the use of firearms and also to their peculiar methods of fighting were well suited to act independently; in fact they combined the attributes of moderate infantry with the mobility of cavalry. The result of the meeting of Napoleon's cavalry with these Cossacks in

1812 is an object-lesson. Although up to that time the French cavalry were second to none in Europe, yet they could make no headway against the Cossack swarms and the latter contributed largely to the defeat and destruction of the Grand Army. On the field of Borodino they did their share by threatening the French left at a critical moment and thus delayed the final attack which was to complete the victory; on the night after the battle they raided the French lines and caused the whole force to stand to arms. At Moscow they held the French army in such an iron grip that it was with the utmost difficulty that the latter could obtain food and forage, and even the intrepid Murat found himself constrained to protect his cavalry, when foraging, with infantry and guns; near Gorodina, Platoff with 6,000 Cossacks swept away the Emperor's escort and was within an ace of capturing Napoleon himself; and throughout the disastrous retreat, the Cossacks harried the French forces like a pack of wolves, effectually preventing all foraging and wiping out detached parties and stragglers.

In the Russo-Turkish war too we have some notable instances of the skilful use of mobile columns by Generals Gourkho and Skobelev.

From the Franco-Prussian war of 1870-71 we can gather little information regarding the independent strategic use of cavalry, although the German Cavalry were highly trained and had a great numerical strength over the French; in fact, after the first period of the war, they had practically no rivals at all to contest the field with. It is true they were used to act as a screen and obtain information for their own armies, but owing to the lack of boldness with which they were handled, even in this rôle they were occasionally found wanting. When Macmahon's army started on its disastrous march from Chalons to Sedan, it was not the German Cavalry that detected the movement, the information was received by wire from London! Again when an effort was being made from the south-east to relieve Paris, the German Cavalry lost touch with the "Army of the Loire" and reported that that army, consisting of 100,000 men, which was in reality within a few miles of them, had disappeared.

Perhaps, however, the most striking examples of the independent use of mounted troops are afforded to us in the War of Secession in America, in which mounted men played so important a rôle.

Throughout this war the Confederates were terribly outnumbered by the Federals ; but due principally to the higher training of their men under splendid leaders and the consequent superior mobility of their forces, they were able to hold out against overwhelming odds for nearly four years.

In the earlier stages of the war, the South had large bodies of mounted troops, composed principally of men well versed in horsemanship and accustomed to outdoor pursuits such as tend to make good soldiers. These bodies of cavalry under leaders of high ability, made themselves a terror to the armies of the North : they were constantly surprising and raiding round them, paralyzing their movements, seizing their supplies, etc., and almost invariably escaping with little or no loss. The material effect of these raids was often great, but the moral effect was far greater.

As it was with us in the Boer war, so in the American civil war, it was only by learning the lessons which their enemies had taught them, by providing their armies with large masses of cavalry and by drawing the cordon tighter around their foes, so as to destroy their mobility, that the North were ultimately enabled to crush the South. It will be interesting to glance at some of these raids and see with what troops they were carried out and what was their actual effect.

The first great ride of the Confederate Cavalry leader Stuart, which made his name so famous, was undertaken with 1,200 men and two guns. In two days he rode round McClellan's army in the Peninsula, located its positions, broke its railway communications, destroyed some transports on the Pamunkey ; burnt large quantities of stores and brought in 165 prisoners and over 200 horses and mules ; and with a loss

History of the Cavalry of the Army of Northern Virginia, by Captain J. G. Harbord, 11th United States Cavalry. Journal of the United States Cavalry Association.

of only one man.

The second of his raids was still more effective. In this, taking 1,800 men and four guns with him, he again circled round the army of the Potomac in three days, dashed into Pennsylvania, captured Chambersburg, destroyed much public property and stores and returned with twelve hundred horses and several hundred prisoners. This raid caused considerable consternation in the Federal capital and had an immense physical and moral effect on the Federal cavalry as they not only ruined their horses in their fruitless endeavours to arrest Stuart's progress, but they also learnt

their own deficiencies: further the movement of the whole army of the Potomac was delayed and thus valuable time was gained for the recuperation of Lee's disheartened army.

In his third ride round the army of the Potomac, Stuart took three brigades of cavalry with him, raided into Maryland, captured a large supply train of 125 wagons, destroyed railways, burned bridges and joined General Lee at Gethysburg five days later. The results of this raid were however greatly discounted by the fact that the absence of his cavalry leader with a large part of the cavalry deprived Lee of valuable information which probably contributed to some extent towards his subsequent defeat at Gethysburg.

In the western theatre of war there were two Confederates who made themselves conspicuous by emulating Stuart's example and conducted daring raids, which had a considerable effect on the operations in those parts. These were Morgan and Forrest and their exploits were directed principally against the communication of Grants' army of the West. Morgan, in his official report of a raid he made into Kentucky in 1862, summed up the results as follows: "I left Knoxville on the 4th day of this month (July) with about 900 men and returned to Livingston with 1,200, having been absent 24 days, during which time I travelled 1,000 miles, captured seventeen towns, destroyed all the Government supplies and arms in them, dispersed about 1,500 home guards, and paroled nearly 1,200 regular troops. I lost in killed, wounded and missing of the number that I carried into Kentucky about ninety." A feature of this raid was the use Morgan made of a telegraph operator, who, carrying a portable battery, connected up with the wires, read off several of the enemy's despatches and sent orders countermanding the movements of the troops sent to intercept him. Morgan also enjoyed himself immensely by sending amusing though hardly complimentary messages to various leading men of the North!

About the same time Forrest marched with a cavalry force into Western Tennessee, captured Murfreesboro' with its garrison including General Crittenden, fell on detached posts and seized convoys. These raids had the effect of weakening the hostile armies by compelling them to detach strong guards for their communications.

These two intrepid leaders, with comparatively small bodies of mounted men, made continual inroads on Kentucky and Tennessee and harassed the enemy's detached posts and depôts.

Another successful confederate raider was Van Doom who, with his Texan Cavalry, captured the main depôt of Grant's army at Holly Springs together with its garrison of 1,000 men and destroyed immense quantities of stores, powder, railway material, etc., he followed this up by taking 2,000 men of Rosencranz's army prisoners.

On the side of the Federals the most notable raid was made by Colonel Grierson in the west in April 1863. Leaving Tennessee on the 17th April with three regiments of Cavalry (1,700 men) and six guns he marched through the enemy's country tearing up railways, destroying rolling-stock and telegraphs, blowing up bridges and burning stores, and arrived at Baton Rouge 16 days later having covered over 650 miles with a loss of 4 killed, 3 wounded and 9 captured. The southerners made the most strenuous endeavours to arrest his progress and surround him but without success. Towards the end of the war, the North, realizing the value of the mounted arm, increased and reorganised their cavalry, with the result that the latter under the able command of Sheridan, who boasted that he "could whip Stuart, if he were allowed to do so," were able to overcome the worn-out cavalry of the South, though even then Wade Hampton and Fitzburgh Lee with their skeleton and half-starved brigades, showed how dangerous a small body of high principled men, fighting in a just cause, can be, even against overwhelming odds.

These are a few instances of the strategical use of cavalry, but it will be noted they are very few and that the tendency has been to restrict the employment of cavalry to tactical effect on the battlefield: the reason for this, as stated before, is that until quite recently cavalry had not the power of self-defence and so was unsuited for independent action.

The value of cavalry has however been enormously increased of late by arming them with rifles similar to those used by infantry and they have thus attained a power of independent offensive and defensive action, which European cavalry, other than the Cossacks, have not hitherto held.

We see then that, with the exception of the American war and the actions of the Cossacks, we can gain little information from history, as the conditions were different: moreover, we must remember that since the occasions when the Cossacks showed their prowess, and the Federals and Confederates fought out their strife, the power of the rifle has

increased enormously and with it has correspondingly increased the efficiency of cavalry armed with the rifle.

We thus find that, after all, we are driven to drawing our conclusions from the Boer war, as that is the only war of recent date, in which the mounted man armed with the powerful rifle of the present day, has been largely used; and if we consider how effective was the resistance of the half-trained ill-organized Boer forces against our highly disciplined army we can hardly fail to be impressed with the effectiveness of a mounted force armed with weapons of precision.

Now considering all our painful experience in the late war in regard to the value of mobility, have we done anything to show that we have learnt anything from that experience and that we have realized that mobility is a most important element in warfare? As far as I know we have done practically nothing. The army at home is being reorganized, but it is extremely doubtful whether this will increase its efficiency. The army in India is being redistributed and reorganized and this will doubtless make it a more efficient weapon but I have heard of no steps being taken to make it more mobile. Have we increased our cavalry or added to the number of horses we maintain or reorganized our system of remounts? I believe not. We have indeed raised a force of Imperial Yeomanry at home, but it is only to replace the old Yeomanry; also we have developed our schools for training mounted infantry, by which we hope to supplement at a cheap cost and with an inferior article our weak force of cavalry.

We have not increased our regular cavalry, and at home we still have nearly two men to every horse. The war strength of our cavalry regiments on the Home Establishment is, I understand, still three squadrons, whilst foreign armies have four or six squadrons and each of their squadrons is about 25 per cent. stronger than ours. Thus a British cavalry division would be greatly outnumbered by that of a foreign opponent, a serious defect when we consider that the cavalry are the "eyes and ears" of an army!

Perhaps the reluctance to increase our mounted troops is due to those loud-voiced critics, who declare that the days of cavalry are over. It seems hardly credible that these men cannot see that it was entirely due to the Boers all being mounted that we were compelled to spend two hundred millions on the war. The days of cavalry over!

The days of cavalry as a decisive factor in warfare are only just beginning; but *not* the cavalry of the old accepted type—cavalry that can only use cold steel and charge knee-to-knee is as obsolete as the knights of the Middle Ages; but in their place has risen a cavalry of a higher grade, those who can match infantry in their power of attack and defence and far excel them in the speed with which they can transmit that power to decisive points.

It is not to be supposed from this that the shock effect of cavalry is depreciated. Far from it. The cavalry charge in the future will be as effective as it has been in the past, and it is as necessary as the bayonet charge is for infantry; but it must hold an analogous position in cavalry tactics. Inasmuch as infantry of the present time would be useless, if armed, as of old, only with the pike, so cavalry that use only the 'arme blanche' can have little tactical effect on the battlefield of to-day; but, relying on the rifle as their primary weapon and shock action as the secondary mode of attack, the utility of cavalry has increased out of all proportion to that of other arms.

It is acknowledged with us that we cannot afford to keep up huge armies, such as the great nations on the continent have to maintain, and the British nation will not at present hear of conscription, it behoves us therefore to use our best endeavours to ascertain whether we cannot find in increased efficiency of the material a substitute for the vast quantity that our rivals possess. In this quality of mobility it seems to me that we are likely to find to a great extent the factor that we are seeking. This is not claimed to be a novel view, as it has already been put forward by more than one distinguished British soldier.

So long ago as 1874 in a remarkable lecture before the Royal United Service Institution Sir George (then Colonel) Chesney suggested an idea which well deserved more recognition than it apparently received. He said that as we could not contend with the conscript armies of the continent in point of numbers, we should strike out a line for ourselves, influenced by the genius and characteristics of our race, "our love of freedom, aptitude for self-government, energetic temperament, readiness of resource and faculty of invention." He proposed that we should have an army of horsemen, trained to the highest degree of excellence to act in either capacity as infantry or cavalry, and that these should be really "picked men taken from a higher stratum of society, sturdy, self reliant,

intelligent, typical Englishmen." With such an army he contended we could ride through any country in Europe and could "utterly cripple and confound an opposing army of vastly larger size: 30,000 men in this way might hold in check 300,000."

He further said:—"I do not suppose the creation of this new force would obviate the necessity for infantry, or artillery or engineers; only—and here is the main points—instead of these horsemen being merely a subsidiary body, that the other branches would act in offensive warfare as auxiliaries to the fighting first line, composed of these our irresistible horsemen."

A prophetic utterance, the truth of which was greatly verified by the Boer war! If 70,000 or 80,000 irregular horsemen, acting independently and with no idea of cohesion or strategical unity, could keep at bay for over two years, the finest army of 250,000 men the British Empire could furnish, who can estimate the power of an equal force composed of highly trained, efficient cavalry, wielded by the single will of a skilful and experienced general? Another authority we have to quote is one no less clear-sighted and deep thinking and further is one who sets forth the latest ideas of the present day. Lieutenant-Colonel James in his excellent work on "Modern Strategy" again and again emphasizes the value of mobility. He says: "The certainty that high training will be necessary in future war points to progress in organization taking a somewhat different path to what has hitherto been the case. Up to the present time every nation has been striving to put the largest number of men in the field. Is it not probable that the huge armies of today, which cannot be trained to a very high pitch, might be vulnerable to the attack of smaller forces brought to a more elevated standard of military training? The huge army is very dependent on its communications. These are always open to attack by a force of great mobility, able to move long distances without much impedimenta. Five thousand men on horses and bicycles with food and ammunition carried on automobiles, able to do fifty or sixty miles a day, could carry destruction into the rear of an army and paralyse its movements, while its power of resistance with modern weapons is so great that it could fairly hope with its mobility to make good its retreat. The raids which Stuart carried out in 1862 will be repeated in the next war on a larger scale and in a more highly-organized manner, and the nation which first thoroughly appreciates the value of mobility and organizes

its army accordingly, will go far along the road which leads to victory."

Again:—"The communications of an army by railroad are vital to the large modern army and are easily destroyed. A General Commanding must therefore devote a far larger portion of his troops to guarding the communications than was formerly the case. This forms an additional argument in support of the smaller but more highly trained force of great mobility which would be much more independent of supplies brought up from the base and which would permit of far more brilliant strategical combinations than is possible to a larger and slower moving force."

Again:—"Now in the case of European warfare the huge masses taking the field will tend to slow down strategical movements, because they are difficult to supply..... But a rapidly moving force, even if relatively small, which can move swiftly round such comparatively inert bodies, will once more exemplify the value of the Napolianic dictum 'Activité, Activité, Vitesse.' The nation which first appreciates this fact and makes a considerable portion of its army truly mobile will inevitably gain the victory over a slower opponent."

Before proceeding further let us summarise the advantages that pertain to an army which, having all the offensive and defensive qualities of an ordinary mixed force, has also the additional power of rapid movement afforded by being mounted: they are:—

(1) *The power of initiative.*—It can strike the enemy when and where it pleases, thus compelling him to abandon his plans and reducing him to the condition of merely defending himself against the blows that are dealt at him. Similarly it can refuse to be drawn into a fight against its will and can easily avoid being cornered and routed. It can select the weak points of the enemy for its attack and can seize important strategic points, such as defiles, river-crossings, railway junctions, etc.

(2) *Superior Intelligence.*—A force of superior mobility may be assured of obtaining better knowledge of the enemy's positions and movements. This alone gives its commander an immense advantage over his adversary, as he knows all his weak points, whilst the latter, like a blind man, ignorant of his adversary's movements, can neither lay his plans for attacking him, nor can prepare with any certainty for fending off his attack.

(3) *The power of surprise.* This is the most potent moral element in war. The best-trained and best shooting troops in the world may be routed by a much inferior force, which effects a surprise upon them. Men who will fight to the last when certain death stares them in the face, may flee like rabbits if surprised and panic-stricken. This factor must be all the more effective against the short service conscript armies of the present day.

(4) *The power of cutting communications.* In these days of huge armies, relying on railways for their supplies, the military transport of wagons and animals has been reduced to a minimum, and in consequence the railways are of vital importance: without them the army cannot be fed and supplied and it must disperse for its component parts to exist. A mobile force that can move round its enemy, break up his railway lines and seize his magazines, will have accomplished the greater part of its task without having struck a blow: further it can upset all the enemy's plans for mobilization and concentration.

(5) *Superior power of subsistence.* A rapidly moving force can be far more easily subsisted on the country it is passing through than a slow moving one, and when operating near the enemy it will often have his captured supplies to utilize. It will therefore require less transport.

(6) *The power of completing victory and lessening defeat.* It is evident that if a quick moving force defeats a slow opponent, it can continue the action until the latter's destruction is consummated; whilst, on the other hand, if the immobile force defeats its nimble adversary, it has not the power of following him up and crushing him.

We have then clearly indicated for us a means by which we can discount to a large extent the numerical superiority of our rivals and at the same time take the fullest advantage of the characteristics of our race and the resources of the empire. Excepting the United States, it would probably be hard to find amongst civilized nations a better recruiting ground for the type of men required than Great Britain and her colonies afford. The high individual intelligence, natural aptitude for horsemanship, sporting instincts and love of outdoor pursuits make our fellow subjects the most perfect material for military requirements.

The Boer war has given us some idea of what the resources of the Empire in mounted troops are. We sent out

* 3,500 from India.
 † The war commission statistics do not give the number definitely.

from Great Britain 26,000* regular cavalry, 35,000 Imperial Yeomanry and a number† of mounted Infantry, probably 10,000. Our colonies, excluding South Africa, sent contingents amounting to 30,000 men practically all mounted: and in South Africa itself 50,000 men were raised; though the war statistics do not show what proportion of these were mounted, it would probably not be less than 10,000 to 12,000 men. We see then that something like 110,000 mounted men were furnished for the war in South Africa, whilst there remained in reserve not less than 10,000 cavalry and Yeomanry at home and 25,000 cavalry in India, making a total of about 1,45,000 mounted men. The supply of horses and mules during the war was enormous: 3,47,552 horses and 1,04,270 mules were transported to South Africa, in addition to 1,26,372 horses and 3,699 mules purchased in that country. This makes the totals 4,74,000 horses and 1,35,000 mules.

These figures give us some idea of the potential power of the British Empire in mounted troops. Of course it must be remembered that a very large part of the above numbers comprised forces hastily collected from distant parts without training, organization or equipment and only united by one common bond, imperial interests, and had they been collected into one army for great operations against a civilised power, the want of organization and cohesion would have told seriously against it. But still it shows us what the capacity of the empire for war is; and were these forces properly organised, there can be little doubt that we should be in a position to protect our interests wherever they might be threatened, even on the continent of Europe.

In order that these resources should be organised into an efficient and effective force what we require first of all is Imperial federation, that is, that each portion of the Empire should bear its share of the burden: the best way to provide this is to call upon our colonies to maintain well equipped forces, which would be available for use wherever the interests of the Empire might demand.

In return we would guarantee them immunity from external attack by maintaining an all-powerful navy.

It is imperative that the control of the navy should be retained in the hands of a central administration, the admiralty, who, having full knowledge of the strength and dispositions of the enemy's fleet, could take the necessary steps to meet and

destroy them. As long as our fleet is disposed of by a single central authority with a view to strategical considerations, it is absolutely impossible for any hostile power to think of an invasion of our outlying colonies. The only method of retaining the strategic control of the navy is for the Central Government to pay the cost and reserve the right to dispose of the naval forces. When the colonies receive a full representation in the Imperial Parliament, it will be time enough to ask them to pay their share of the cost of the navy.

The colonies might well be asked then to provide a military contingent towards the maintenance of our imperial interests. The Dominion, according to its new scheme is to have an army of 46,000 men with 100,000 reserves in the first line and another 100,000 in the second. If such an unfortunate occurrence as a war between this country and the United States should ever take place, the defence of Canada must be looked upon as an Imperial question and there is very little doubt that the offensive with mobile armies of mounted troops would be far more likely to bring about the desired result than using large masses of infantry, which would give the States the time necessary to bring their vast resources into play. For their own interests then and from the imperial point of view, it would be better that the Dominion should maintain a strong force of cavalry say 20,000 men, with a weak force of infantry capable of expansion by reserves into say 100,000 men for local defence.

Again if a force of 10,000 or 12,000 cavalry were maintained by the South African colonies, it would, coupled with the S. A. constabulary, be a far more efficient protection against possible internal disturbances than the 25,000 regulars of all arms at present maintained as a garrison there.

In the Australian Colonies and New Zealand we might look for another 10,000 cavalry towards the Imperial army and here infantry for local defences are almost unnecessary.

In India we have 36 British and 155 Indian squadrons with an effective strength of about 28,000 men exclusive of the Imperial service cavalry and volunteers.

Apart from those in India, our regular cavalry consists of 22 regiments having an effective of about 15,000 men (though a large number are not supplied with horses!) and besides these there are about 17,000 Imperial Yeomanry.

If then we could rely on the colonies maintaining the forces proposed above, and it would of course be necessary that they

should be thoroughly equipped and organised in brigades and divisions and trained under an efficient staff, we see that the British Empire would dispose of a force of over 100,000 cavalry. With this strength we should be able to put a cavalry army of 50,000 men into the field wherever we might wish, and still have a similar force in reserve to draw upon and to protect our interests elsewhere.

This computation takes no account of mounted infantry, which we should certainly raise from our regular infantry battalions, as we have been so sedulously training them in the mounted infantry schools at home and in India. Our authorities are evidently much enamoured with the mounted infantry idea and this hybrid arm undoubtedly performed a very useful rôle in South Africa, but it must be recognized and has even been accepted by mounted infantry officers in the war (*vide* Colonel Pilcher's "Some tactical lessons of the Boer war") that the whole arrangement is merely a makeshift for reasons of economy and that there is nothing that mounted infantry can do, that cavalry cannot do better; the short time of training cannot make the mounted infantry man an adept in horse management and horse mastership, and to rely on such men in extensive mounted operations would merely clog the wheels, for without the necessary knowledge and care of their horses they would certainly break them down. It is strange why we always send mounted infantry on our small expeditions from India in preference to native cavalry, of whom we have such a good and efficient supply. If the cavalry horses are too valuable, why not mount the sowars on ponies? The service would be good for the cavalry and they would get more out of their ponies with probably a good deal less cost to Government.

However as there is not much probability of our cavalry being largely increased we must gratefully accept the less satisfactory substitute. With a cavalry force, such as we have proposed, we must have a corresponding strength of artillery and they must be as mobile as the cavalry, that is capable of marching thirty miles a day for several days at a stretch: with this view they must be provided with extra horses, so that the number of horses in each train may be increased or spare trains taken. Allowing 4 guns per 1,000 men we require that 70 batteries should have the necessary mobility. It is not necessary that these batteries should all be horse artillery, for we do not want galloping, but we want them to be capable of doing long distances. A certain

number must of course be horse batteries as they would be required for acting with the cavalry against cavalry. A strong force of Mounted Engineers would also be indispensable, as the destruction of enemy's communications, depôts, etc., would be an important part of the rôle of a mounted force, and further the whole 'raison d'être' of such a force would be vitiated, if it was constantly delayed by broken bridges, impassable rivers, etc. Field telegraphs would be impracticable but a certain number of telegraphists with instruments to connect up with the telegraph and telephone lines of the country would be invaluable.

In order that this mounted force should retain its mobility when in the field it must be well found in horseflesh and so each unit should take with it at least five per cent. spare horses, though probably they would be able to replenish their supply to some extent from the country in which they were operating. Ten per cent. also should be kept up at the base, which should be constantly supplemented, so that horses should not be taken for hard work before they were fit for it.

As regards transport, it would have to be clearly understood that a force to be truly mobile must accommodate itself with a minimum of transport, but that the transport must be of the very best description and furnished with a large percentage (at least 10 per cent.) of spare animals and wagons. It also must be accepted that the force would have to live entirely on the country in which it is employed, as it would be quite impossible to maintain a system of supplies from a base or depôts; consequently the supply wagons would only be as many as would be necessary to collect supplies for say three days.

Our South African experience seems to show that two four-wheeled wagons would be ample to carry all the stores, food, entrenching tools, and reserve ammunition for each company or squadron.

Colonel James in 'Modern Strategy' says that "in Western Europe experience shows that a force of 100,000 to 120,000 men can, without being far separated, perfectly well subsist without magazines or any special arrangement for supply during an advance which is interrupted by only single day halts." If this is true for an ordinary force there need be no anxiety about a rapidly moving one; the more so as we expect them to subsist to a large extent on the enemies' supplies.

In a European country the question of transport ought to be greatly simplified by the use of mechanical transport, as coal, oil or other fuel can always be obtained and the roads are good. Motor traction would be particularly useful for heavy artillery, ammunition columns and hospitals.

The field hospitals to accompany such an army would have to be reduced to a minimum, as sufficient mobility could not be obtained for the ordinary large medical establishment authorised without an enormous amount of transport. Any large numbers of sick and wounded would probably have to be abandoned, with sufficient medical officers to look after them, to the enemy's care.

Hitherto we have only considered the mounted army but we should have to support this with a strong infantry force with its due complement of other arms. In the first place we should require such a force to give us a foothold on the enemy's territory, *i.e.*, to seize and strengthen a base on his coast on which to disembark our army; as this base would have to serve for the organization of the force after landing and would contain the depôts of men, horses, supplies and ammunition, it would require to be of some extent and would have to be protected with redoubts and entrenchments. We may note here that the insular position of Great Britain which confers on her such an immense advantage in the matter of protection against foreign enemies is a distinct disadvantage when she wishes to transport an expedition into an enemy's country, as although she can choose her point for attack, yet the sea transport disorganizes all the arrangements, unfits the animals for work, and would inevitably cause delay in starting after debarkation. Moreover unless we had not only command of the sea, but absolute control over it we could not despatch a force at all, as no sane man could contemplate sending a fleet of crowded transports to sea, unless they were absolutely safe from attack by torpedo boats or submarines.

After our base of operations had been once firmly established and fortified, its defence could be relegated to reserve troops and this would free the mixed force to operate in the field in conjunction with the mounted army. Such action would be necessitated by the fact that we could not hope to provide a sufficient strength for our mounted force to give a decisive effect.

The mixed force would of course consist of the flower of the British army and would therefore be in a

high state of efficiency, but it would have to be specially trained to rapidity of movement, so that it should at least be capable of moving quicker than the enemy's troops; this is of the utmost importance, as it must be prepared to make forced marches so as to combine with the cavalry in unexpected attacks on the enemy. With this end in view every thing except his arms and ammunition, his great coat and his day's ration should be carried for the infantry man by the transport. As this mixed force would often be called upon to make a containing attack or act upon the defensive, while the mounted force was operating against the enemy's flanks or rear, it should be well supplied with entrenching tools. For the same reasons it should be furnished with a powerful artillery as in both those rôles artillery fire is most important. Also it must have its own full complement of cavalry, which should be not less than an eighth of its strength, in order that it may have full knowledge of the enemy's movements, may be able to maintain touch with the mounted force and may have a strong mobile reserve for resisting an attack in strength when it is holding an extended position. We may now take a rapid glance at the possible handling of an army composed as suggested above. Let us suppose that in the event of a European War we are drawn into an alliance with one or other of the powers, either with France against Germany or with Germany against France, or with Russia against Germany, or any other combination. We decide to assist our ally by striking behind the enemy's main armies at his communications or his capital with an army of 100,000 men, half of which is a purely mounted force and the other half a force of all arms. With this object, assisted by the guns of the fleet we seize one of the enemy's seaport towns suitable for debarkation, throw up redoubts around it and strengthen it in every possible way, at the same time landing our army as quickly as possible, in order to give the animals as much time possible to recover from the voyage. If our point of attack is well selected, the enemy will have no knowledge of it beforehand and will have to make his arrangements to meet it after the debarkation has commenced. He would have to concentrate an army against us to try and "drive us into the sea". Let us say he details 300,000 men for the purpose—now 300,000 men cannot move in a mass like a brigade they must spread out for convenience of marching and of supplies—railways have facilitated the supply of an army, but it would still be almost impracticable to supply so large a force

if kept continually concentrated. It is probable that a force of this size would advance on a front of sixty to a hundred miles. Here then would be the opportunity for our mobile force. The cavalry force would first advance and clear off all the enemy's cavalry, so that he should be absolutely in the dark as to where the impending blow was going to fall. But, it may be urged, the enemy would probably have some 30,000 cavalry who would contest our movements? An article in the Royal United Service Institution journal on "German ideas on the rôle and employment of Cavalry" shows clearly that foreign nations (except the Russians) cling to the old idea of shock tactics and practically nothing else. Cavalry handled in this manner, if we may judge by our experience in the Boer war, would have no chance against cavalry, who combined fire action with shock action and we might rely upon it that our enemy's cavalry would be overwhelmed. With the hostile commander in complete ignorance of our movements, we could move against one or other of his flanks and overwhelm it. A flank would probably consist of 70,000 or 80,000 men and against these our mixed force would make a containing attack in front while the mounted force attacked them in flank and rear. The result could not be in doubt, if we think that a force so attacked would have each of its faces enfiladed by artillery fire and its line of retreat and supplies cut off. It would thus be defeated and driven back in confusion on to its centre, which would very probably be thrown into confusion and perhaps routed without being able to form up for defence. Even if this did not happen our army would have planted itself firmly on the enemy's flank and would compel him to change his front to a flank within striking distance of a victorious and mobile army, and with his communications and supplies directly threatened by a mounted force of great strength.

It may be argued that this is taking an optimistic view of the situation and working the thing out theoretically to one's own satisfaction, but it is very hard to imagine a plan by which a mobile force of 50,000 cavalry could be prevented from working round a flank and breaking in on the communications.

Take another case. Suppose the enemy fearing that one or other flank might be threatened, kept his forces so concentrated as to be in supporting distance of each other and advanced against us in this close formation, how could we deal with them? Well a force of this size could not possibly be subsisted in a concentrated formation by any possible system of supply other than that of an organized line of railway or

river. It must be remembered too that a large force of 200,000 or 300,000 men cannot be wheeled to a flank suddenly or change its direction without dislocating its supplies. When the German armies (the 3rd and Meusut) changed their line of march to intercept Macmahon's movement towards Sedan, they left their line of communications and lived on the rations they took with them. The distance was only about sixty miles and their numbers not much more than 200,000 men, yet they suffered severe hardships in the matter of food.

In the case we are considering then our cavalry force would move round the enemy's concentrated army and throw itself across their communications. This would imperil the very existence of the enemy and would impel him to immediate action to save himself. The alternatives that offer to him would be (i) to attack and drive off the intercepting force; (ii) to move to a flank and endeavour to open out a new line of communications. If he adopted the former, our cavalry force would merely retreat before him, but keeping on his line of supply, so as to keep him in straits for food and our mixed force would threaten his rear; if he tried to move off to a flank he would expose himself to attack on both flanks, with a great probability that when he had abandoned his old line of supply, the new one would be equally promptly cut in the same manner.

He might of course try to throw his whole weight on our mixed force, but it would be an extremely risky operation for he would be attacking a force in a defensive position with an extremely dangerous mobile force in his rear, and with starvation staring him in the face and the certainty of ruin in case of defeat. In all probability the fact of having his communications cut would compel him to break up his army into two or more portions, which would be liable to be defeated and overwhelmed in detail.

Take one more case in which the enemy are bringing up their armies by converging lines, each with its own line of supply, in order to surround us. There should be no doubt about the result in such a case, as our mobile forces moving on interior lines, should be able to defeat them in detail or if each of their armies were too strong to be attacked directly, their combined action could be upset by operating against one of them in the manner proposed above. But perhaps some one will say, "this is a very dangerous theory and contrary to all the principles of war to divide up your forces like this: they would be liable to be defeated in detail." It may be contrary to the accepted teachings in books which are based

on "cæteris paribus," but in this case the introduction of the element mobility upsets the 'cæteris paribus.' It certainly is not contrary to the principles of war, as those principles are to defeat the enemy with as little danger and loss as possible to yourself. Mobility gives you the power of strategical combination to defeat the enemy and also the power of avoiding danger.

The more one considers all possible situations, the more does one become impressed with the advantages held by a mobile force provided it really has that mobility.

In the above examples we have only considered a European war, but the same principles would apply all the more in a war in a semi-civilized country, provided it was not a mountainous one, because in such a case the communications are more defined, are probably longer and weaker, and are not capable of being easily shifted. For instance, if we were fighting Russia in Afghanistan and our army was face to face with a Russian army, say at Girishk, then if we could despatch a force of, say, 20,000 mounted men to intercept their communications with their base (probably at Herat) that Russian army would be doomed. It may be remarked here, by the way, that the Russians are the only nation who train their cavalry with the express intention of using them in very much the same way as has been proposed above. In their cavalry the use of the rifle is the first consideration: they also have a powerful artillery, carry intrenching tools and a bridging train with them. With the enormous numbers they possess in Europe (1,078 squadrons against 895 squadrons in Germany and Austria combined) it is anticipated that, by using them in independent corps, they will be able, on the declaration of war by either of the above powers, to cross the frontier, cut communications, seize important points and hold them, and paralyze the enemy's mobilization movements.

In a war in Afghanistan they would probably bring a large force of Cossacks against us, but we need fear nothing from this provided we have a strong cavalry force, as our men will be of a higher level of training and intelligence and in this as in all other warfare the higher training will tell: if however our army is not well found in cavalry, we shall feel its want very seriously.

It may be argued that the far famed Cossacks have not shown to much advantage in the Japanese war. We have not as yet got sufficient information about this war to be able to

say why this is : but the reasons probably are that there are not many Cossacks in Eastern Siberia, that the majority of those that are there are not real Cossacks, but are merely untrained colonists, and that the theatre of operations is too mountainous for their mode of fighting. Doubtless when we get full accounts of the war we shall obtain some valuable information on the subject.

Before we leave this subject, there is one more point that must be considered and that the most important of all, the Commander required for our mobile army.

There is a tendency in all armies in peace-time to make generals either on account of high social connections or on account of other qualities, such as clerical skill, eccentricity, or self-laudation and when the stress of war comes, they are found wanting. Probably not one officer in five hundred is fitted to be a general and of these not one in ten would be suited to command a mobile army. Certain it is that unless a man had necessary qualities of keen intelligence, quick grasp of the situation and prompt action, the advantages of mobility would be to a large extent wasted. It is no use putting a rapier in the hands of a man accustomed to wield a bludgeon : equally would it be useless to put a slow, dogged determined man to command a nimble mounted force. The Boer war has shown that we have two or three Generals thoroughly suited to such a command.

PRÉCIS OF FOREIGN PAPERS OF SPECIAL INTEREST.

GERMAN PAPERS.

BY MAJOR H. W. R. SENIOR.

Internationale Revue ueber die gesamten Armeen und Flotten (November, December and Supplements).

The number for November has a short account of the arsenals and ordnance factories of China. Of these the principal are Han-yang in Hu-peh Province, Nanking and Kaing-nan, the latter close to Shanghai both in Kiang-su, Fu-chou in Fu-kien, and Canton. Smaller arsenals are situated at Kai-feng Fu in Hu-nan, Hsi-an Fu in Shen-si, Tai-yuan Fu in Shan-si, Te-chou near Tsi-nan Fu in Shan-tung and Kwei-chou in the province of the same name. The following are also being built: Nan-ch'ang Fu in Kiang-si, Chang-sha Fu in Hu-nan and Cheng-te Fu in Ssu-chuan. There are several smaller factories which have been omitted in the paper under review, in fact almost every capital of a province in China has a more or less moribund arsenal, the possession of an arsenal affording a capital opportunity for "squeeze". There is also a proposal to remove the Kuang-nan arsenal to the neighbourhood of Wu-hu, a treaty port on the Yang-tse. Steps have already been taken to create an arsenal at this place. It is also proposed to remove the one at Nan-ch'ang to Pin-siang, on the western borders of Kiang-si, where coal and iron are abundant. It is apparent from the above that China is making great efforts to become a self-contained military power.

From this number we also learn that the Emperor of Japan has ordered the formation from the reserves of 8 new divisions of 15,000 men each. The importance of retaining numerical superiority over the Russians has been pressing very heavily on the Japanese, whose losses, due to their generally being the attackers, must have been heavier than those of the Russians.

This number also contains important news regarding the increases made by the Russians in the two Turkestan Army Corps. An extra company has been added *per* battalion to the infantry, which in case of war would form cadres for further expansion. Batteries of artillery and companies of transport and of engineers are also being raised. The German writer points out that the 64 battalions now in Turkestan form the

normal strength of two corps, but that this increase in the technical troops suggest the probability of an early augmentation of the garrison of Turkestan from two to four corps. The completion of the Orenburg-Tashkend railway makes the provision of the necessary infantry to complete the new corps a comparatively easy matter.

Brazil and Turkey are arming their artillery with the most modern recoil absorbing quick-firers on the Krupp system.

The December number reviews the Russian mobilisation for the war now being waged. In 1879, consequent on the small number of reservists and the very slight incidence of the compulsory horse registration in comparison with the large number of horses in the Russian Empire, every reserve man and registered horse had to be called out. Since that time the mobilisation arrangements of the Russian army have been so expanded that at the present time, out of the 764 reserve circles into which the Empire is divided, reservists have been called out from only 419 circles, and even in many of these the mobilisation has been very partial.

The 55th German supplement gives a very interesting account of the so-called mounted infantry in the French army. That in existence at the present moment is a part of the XIXth Corps and is cantoned along the Morocco border as a protection from the robber Berber tribes, who mounted on camels were in the habit of raiding the French oases. A border force of cavalry would have been too expensive, so an arrangement of mounting light infantry on mules has been adopted. Four companies of these special troops have been formed. Each company consists of 3 officers, 3 officers' horses, 252 rank and file and 118 mules. Each mule carries the kits and two days' rations of two men together with two days' grain for himself. He also carries a rider, for he is shared between two men. Thus one half of the men are mounted, while the other half march. They change every hour. The usual march formation is a loose hollow square, in which the men whose turn it is to sit on the mules ride in four troops in the centre. The personnel of the corps is changed yearly in order to train as many men as possible and also to prevent any tendency on the part of this mule infantry to "degenerate into a mounted corps".

In 1901, in China, in consequence of the paucity of cavalry with the French force General Voyron converted

No. 1 Company of the 16th Colonial Infantry Regiment into mounted infantry. This company was 100 strong, and was mounted on Chinese ponies. Each man carried a rifle slung on his back, a bayonet, pouches with 120 rounds of ammunition, a canteen and havresack. The company was divided into four troops, which were further subdivided into groups of five, one of whom in action was horseholder to the other four. Each troop had for transport one two-horse Chinese cart with a Chinaman driver.

The 56th German supplement is taken up with an account in considerable detail of the coast defences of the various countries bordering on the Baltic Sea.

The 57th German supplement gives an account of the several automatic pistols, which were the subject of experiment by the Swedish committee lately assembled to select a new weapon for their officers. After trying eight different systems the committee appear to have come to the decision that the advantages of the new weapons over the old well-tried revolver were not sufficiently obvious to compel the State to go to the expense of re-arming their officers with an automatic pistol.

The 65th French supplement describes the arrangements for the transport of troops by the Siberian railway as far as Lake Baikal. Food-supply stations have been opened at Rjalsk, Pensa, Cizran, Samara, Buguruslan, Ufa, Slatoust, Cheliabinsk, Kurgan, Petropaulovsk, Omsk, Kainsk, Ob, Taiga, Mariïnsk, Krassnojarsk, Kansk, Nijdni-Udinsk, Sima, Malminskoe and Baikal. At these places arrangements have been made for the simultaneous distribution of 2,003 hot meals. Men can also cook on the stoves, with which each of the covered cattle trucks, in which they are transported packed 40 in a truck, are supplied. Clothing depôts to supplement the warm clothing, which the men are given on starting from Russia, have been established at Irkutsk, Baikal and Cheliabinsk. Rest-camps have also been prepared at Pensa, Samara, Cheliabinsk, Ob, Krasnojarsk and Malminskoe.

The 67th French supplement contains a collection of Moltke's remarks and criticisms on the campaign in Italy in 1859. It has also an article on the armament and equipment of cavalry, of which the following table gives the gist.

		Germany.	Austria.	Italy.	France.	Russia.
Year of construction of carbine } Weight in lbs. } Sighted to (metres) Magazine Number of rounds How carried	1888	...	1895	1891	1890	1896 (Rifle not carbine).
	6.8	...	6.7	6.8	6.6	9 with bayonet.
	1,200	...	2,400	1,500	2,000	1,700.
	Charger clip	...	Charger clip	Charger clip	Charger clip	Charger clip.
Sabre	5	...	5	6	3	5
	Leather bucket on right rear of saddle.	...	Slung on left shoulder	Leather bucket on right rear of saddle.	Cuirassiers as in Germany rest slung on left shoulder.	Slung on left shoulder.
Bayonet	On saddle behind left thigh.	...	On person, slung from waistbelt.	On saddle behind left thigh.	On saddle behind left thigh.	On person slung from right shoulder edge to the rear.
	Nil	Nil	Nil	On carbine, fixed by spring and lying along wood of fore-end.	Nil	Cossacks also carry a dagger.
Revolver	Non-commissioned officers.	Non-commissioned officers	Non-commissioned officers	Non-commissioned officers and pioneers.	Non-commissioned officers	In sheath fixed to outside of sword scabbard.
Lance	With steel shaft, definitely adopted by Germany.	Guard Regiments and then only in peace for escort duties.	Front ranks of Dragoon regiments only.	Front ranks of Dragoon regiments only.	The 6 first regiments of cavalry only.	Non-commissioned officers. Cossacks all carry a pistol.
Ammunition— Rounds on person. " on horse	30	30	30	24	48	Front ranks of the 38 regiments of Don Cossacks only.
	15 in the holsters	20 in a pocket fixed to the rear partition of the left holster.	...	36	Nil	
" in regimental transport.	Nil	Nil	Nil	Nil	Nil	4*
						Nil.
						3 one-horse two wheeled carts carrying 15½ rounds per rifle.

* These numbers are not correct. They should be, on person 45 rounds, in regimental carts 24 rounds.

OF SPECIAL INTEREST.

In divisional reserve	waggons carrying 60 rounds <i>per</i> carbine.	Cavalry divisional ammunition column 9 rounds <i>per</i> carbine. In Army corps ammunition column, 18 rounds; in Army park, 26 rounds <i>per</i> carbine. 298	Nil	73 rounds <i>per</i> carbine in the Arty. divs. park. 265—287	Each horse battery has one wagon with 13½ rounds <i>per</i> carbine. In each of the 3 sections of the park 198 rounds <i>per</i> carbine. Light Cavalry 265; Dragoons 287; Cuirassiers 331. Air bags made from water-tight forage bags. Aluminium pontoons under trial.	Nil.	20* rounds <i>per</i> rifle in the park.
In ammunition park reserves.	Not settled	287—331	Nil	Each Cavalry Division has attached to it a pontoon troop, capable of making 65½ feet of bridge.	6 leather bags for making rafts <i>per</i> squadron.	289	
Total weight in lbs.	Per regiment, 2	fording boats and superstructure in a 6-horse wagon. Will make bridge 26½ feet long and 9½ feet wide, or one raft capable of carrying field gun with limber and 4 gunners, or 3 men with horses, or 25 foot soldiers.	Aluminium boats carried on special carriage.	None as yet adopted.	Each regiment has 6 trained men, 14 miles light wire also helios, and flags for signalling. Each cavalry division has a light telegraph section attached, with 2 Mangin helios, 2 Morse apparatus, 3 telephones, and 8½ miles of light cable.	Each regiment has 1 one horse cart with 2 Morse apparatus, 4 telephones, 2 helios, 2 signalling lamps, and nearly 2 miles of cable. Each squadron has also a signalling lamp.	
Equipment for crossing rivers.	Field telegraph and signalling.	Apparatus and wire carried on the folding boat carriages. The Sapper Detachment with Cavalry Division is also provided with same.	Each Cavalry Division has a Telegraph Detachment with 6 telegraphers who carry 20 miles of wire and can form 4 stations. Each regiment has also a telegraph group of 2 non-commissioned officers and 2 men with 4 led horses carrying apparatus and wire. A Mangin helio is also carried by each regiment.				

* This number is not correct. It should be, in local parks 266 rounds *per* rifle.

	Germany.	Austria.	Italy.	France.	Russia. Cossacks and Dragoons.
Sappers and Pioneers.	With each Cavalry Division is a Detachment of Sappers, 1 officer and 30 men, carried on requisitioned wagons. 6 pack horses and 1 tool cart. On horses, 32 shovels, 48 hatchets, also one tool cart <i>per</i> regiment. Pioneer Det. have 13 spades, 6 picks, 8 axes and 3 hatchets.	8 Pioneer squadrons, also a detachment <i>per</i> regiment of 2 officers and 25 men.	1 Non-commissioned and 8 pioneers <i>per</i> squadron.	6 pioneers <i>per</i> squadron	Detachment of Pioneers, 2 officers, 16 men <i>per</i> regiment.
Tools	On horses, 32 shovels, 48 hatchets, also one tool cart <i>per</i> regiment. Pioneer Det. have 13 spades, 6 picks, 8 axes and 3 hatchets.	4 shovels, 2 picks, 2 sets carpenters' tools on person of pioneers. 4 picks, 4 shovels, 3 axes, 5 hatchets, 2 saws, and 2 casus small tools in tool cart.	Saws, bill hooks, hatchets carried on person of pioneers, squadron cart carries, 4 cart carries, 4 shovels 2 hatchets, 10 bill hooks, 1 saw.	On led horse <i>per</i> squadron 2 shovels, 4 bill-hooks, 2 hatchets. Each Horse-Battery has 44 entrenching tools and 39 tools for rail destruction.	20 shovels, 20 hatchets, are carried <i>per</i> squadron and also 4 large shovels and 4 axes are in the squadron cart. Each regiment has also a cart and 6 pack horses with 14 crowbars, 14 sledge hammers, 14 claw wrenches, 8 screw wrenches, 3 heavy shovels, 2 levers, 12 pickers.
Explosives	On folding boat carriage, 40 detonators and 32 cartridges each of 24 lbs. explosive. In Divisional Ammunition reserve are 112 such cartridges and 200 detonators. Pioneer Detachments have also 400 lbs. of high explosive.	Each regiment has 32 cartridges each of 24 lbs. of ecraut, 40 detonators and 24 fuses, carried on a special pack horse.	Each pioneer carries on his horse two 100-dynamite cartridges, also one of 84 oz. The squadron cart has 32 cartridges of 1 oz., and 16 of 84 oz.	Each regiment has 150 cartridges of 34 oz. each of melinite with detonator and Bickford's fuse. Each Horse Battery carries 1,500 such demolition cartridges.	The regimental pack horses, carry 2-9 lbs. of explosives 25 detonators with Bickford's fuse attached and 40 spare detonators. One regimental cart has 284 lbs. of pyroxiline, the other has 1564 lbs. of same, also 344 yards of insulated wire, one induction apparatus, 24 ordinary and 6 Deyer detonators, 100 yards of Bickford's fuse, 4 charges of dry explosive.

The 68th French supplement gives a somewhat technical comparison of the respective merits of springs and of compressed air as a means of checking recoil in field guns. This is followed by an interesting article on mountain artillery. The author quotes from Clausewitz that "the artillery is the most terrible arm," and then shows how much more terrible modern artillery has become, when its power is at least 500 times greater than that of the artillery of the time of Clausewitz.

The following table gives the number of guns, omitting howitzers, per 1,000 rifles in the principal continental armies:—

Country.	Number of guns in a battery.	Number of guns per 1,000 rifles.	Number of artillery carriages per 1,000 rifles.	Number of rounds per battery.
France	4	3.20	12.80	1,248
Switzerland	4	2.70	9.50	1,020
Denmark	4	2.84	7.10	848
Germany	6	5.04	13.44	1,132
Italy	6	3.49	9.30	1,164
Holland	6	3.00	9.00	1,392
Russia	8	3.65	9.10	1,440
Austria	8	3.43	6.80	992

If howitzers be included, Germany has 5.76 guns and 1,572 artillery carriages per 1,000 rifles. The proportion of guns to rifles actually employed in a battle has a tendency during the course of a campaign to rise. For example, the 1st Bavarian Army Corps on the 31st October 1870 had 5.8, on the 3rd December 8.8, and on the 9th December 11.1 guns per 1,000 rifles.

The author thinks that if Clausewitz were living now he would favour a large artillery, but that he would reduce the number of guns in the battery while increasing the number of rounds per gun available.

French supplement No. 69 is devoted to a long illustrated article on the advantages of telescopic sights for field guns.

This is followed by a description shot by shot of the damage done to the "Askold" on the 10th August 1904, while escaping from Port Arthur.

Militär Wochenblatt (Nos. 111-154 and supplements).—Numbers 114, 115, 122, 123, 124, and 125 contain interesting comparisons between the French and German artilleries. The French gun has an allotment of 312 rounds, the German gun has 96 rounds less. In Germany the leading tactical principle in battle is by means of surprise and concentration of fire to obtain as soon as possible an overwhelming superiority over the enemy. The French, on the contrary, prefer to keep a portion of their artillery in reserve, and therefore open fire with only such number of the guns in line as in their judgment will suffice to deal with targets as they offer themselves. The French regulations even appear to contemplate the distribution of fire on different targets by guns of the same battery, thus laying as little stress on concentration of fire as on its simultaneous commencement. They expect by their greater rapidity in sudden bursts of fire to obtain the same results as the Germans hope to get by a sustained and concentrated fire.

The pace of the German trot, gallop and walk compared with that of the French is 4:5, $2\frac{1}{2}$:3, and $7\frac{1}{2}$:7 respectively. This is principally due to the greater weight of the French gun.

The French regulations tend to avoid long lines of massed batteries, and are therefore more favourable to concealment of the artillery than are the German regulations. In order to gain cover the French artillery may be crowded together by the reduction of the normal interval between the guns. The French gun-shields make this arrangement possible without fear of excessive loss.

The commander of a French advance guard is directed to spread out his artillery in order to deceive the enemy as to its strength. A German commander, on the contrary, is ordered to keep his guns together well in hand. He is allowed to distribute his guns only when on the defensive, and then only in exceptional circumstances. The German author of this article considers that, generally speaking, the French artillery regulations are formulated in the interests of the artillery, while the German regulations are more concerned with the good of the army as a whole. The Japanese in the current war seem largely to have followed French tactics.

No. 130 reviews the effect of the new Japanese military service law. This law extends service in the reserve for the

Japanese soldier by five years. The yearly number of recruits now taken is said to be 190,000. This number should suffice to keep the strength of the army now in the field at about half a million men.

A writer in No. 134 describes the probable future importance in the attack and defence of fortresses of automobile batteries. This number also gives an account of an experiment in which a motor car chased a balloon for 80 miles and arrived on the spot within 55 minutes of the descent of the balloon. It is therefore probable that men escaping with despatches from a besieged fortress by means of a balloon would have sufficient time to make good their escape, especially in a friendly country, even though they were pursued by fast motor cars.

No. 150 contains an interesting comparison between the "death-rides" of Lord Cardigan at Balaclava and of Von Bredow at Vionville. The results obtained by the latter lose none of their importance in this comparison.

A defamatory article in the Paris Press has caused M. Ferron to take up the cudgels for the military surgeon. He tells us in No. 154 that according to the French archives between the years 1799 and 1888 the losses of military surgeons totalled to 965, of whom 548 were killed or died of their wounds, the remainder being the victims of disease.

The 10th and 11th supplements do not contain anything of much interest.

FRENCH PAPERS

BY CAPTAIN G. H. WILLIS, R.E.

Revue de Militaire Suisse, September, October, November.

The article of most general interest in these three numbers is that devoted to the "Combat between Infantry and Machine guns". I cannot do better than give a translation of the author's conclusions which conclude a well-written and well-argued article.

1. Machine guns seek broad and deep targets; infantry should therefore advance against them in broken lines with big intervals.

2. Their effect is terrible, but the small cone of dispersion (20 to 50 metres at middle and long ranges) gives great importance to the direction of fire: infantry ought therefore to profit by the intervals necessary for the correction of the range to get under cover.

3. The machine gun is worked by a single man whom one bullet will put out of action; it is therefore unnecessary to expose a large number of men when the duty only calls for a patrol.

4. The machine gun requires about a minute to come into action and therefore cannot be advantageously employed against rifles at less than 500 metres' range. Patrols should therefore seek to advance as early as possible to within that distance.

5. Machine guns can change their position very rapidly, hence a single patrol is insufficient and several should be employed in all directions in which it can be reasonably expected that a machine gun may take up a position.

6. When machine guns are protected by their own fire, so that owing to the nature of the ground it is impossible for the patrols to approach them, the fire of one or more units should be directed upon them concentrically, and advantage should be taken of the changing of gunners to advance by rushes.

7. Artillery can be employed with great advantage at long ranges to aid infantry where the machine guns are easily visible.

An article, illustrated with excellent photographs, describes the bridging of the Aar by the engineers. A trestle bridge, $112\frac{1}{2}$ metres long in water 2 m. 40 deep with current of 2 m. 50 per second, was completed in 113 minutes or at a rate of considerably more than a yard a minute working from both sides. A pontoon bridge over the same river took 50 to 55 minutes.

An exhaustive article on the Ehrhardt howitzer of various patterns appears in the November number, comparing them favourably with those of the same power in use in the French and German armies. This article is also illustrated with very good photographs. The latest model of these howitzers discards the tubular carriage and trail used in the 1900 patterns. All these weapons are specially constructed so that the recoil on the carriage is automatically diminished as the angle of fire increases. This enables the piece to be used at extreme angles of elevation without necessitating the ground beneath being specially prepared.

Revue du Cercle Militaire, 13th August—19th November.

The whole of these numbers consist of a continuation of the précis of the Russo-Japanese war and of an article on the new infantry training which is too long to deal with. The tactical schemes are begun anew, the number of the 15th October containing a problem on a flank guard action, the solutions to which appear in the numbers for the 12th and 19th of November. The number for the 19th of November contains a problem on an advanced guard action.

Revue de Cavalerie, August, September, October.

In view of the articles in this and the preceding numbers of this journal bearing on the best arms for cavalry, it may be of interest if the views of a French officer as expressed in the *Revue de Cavalerie* are given here. While desiring the retention of the "arme blanche" and shock tactics, he fully admits the absolute necessity of fire effect in many instances. He suggests that this fire effect is not to be sought by turning cavalry into inferior infantry, hampered by held horses, but that it should be supplied by machine guns. The remaining article in these numbers are not of general interest.

RUSSIAN PAPERS.

BY CAPTAIN D. H. MCNEILE.

Voennii Sbornik, January to October 1904.

Prince Eugène Napoleon. This is a series of articles running all through the numbers under notice, except that for June and still to be continued.

It deals with the period between Napoleon's abandonment of the Grand Army on its retreat from MOSCOW, on the 15th December 1812, and the time when he again appeared at the head of a new Army, and during which Prince Eugène Napoleon was left to bear the whole burden. Far from being a bare account of actions and operations, the article presents an interesting picture of the moral and political difficulties which confronted the Prince.

Placed in supreme command after the hasty and rather cowardly withdrawal of Murat, we find him left to face the pursuing and victorious Russians, with troops half clad, half frozen, and decimated by disease, a large proportion of whom had no love for the French, and were only too ready to seize any opportunity of turning against their former conquerors, once they were assured of a reasonable probability of success.

The open defection of York and the secret treachery of Schwarzenberg, coupled with his want of Cavalry and consequent inability to gauge the strength or acquaint himself with the movement of the enemy, reduced him to a condition, which accounts for his premature evacuation of POSEN and retreat to the line of the ODER.

The article goes on to follow the efforts made by the Prince to reorganise the remnants of the Grand Army and the vicissitudes and gradual retreat of that Army to BERLIN and then to the line of the ELBE. The selection by the Prince of the MIDDLE ELBE as the line to be held, with a view to the protection of DRESDEN and LEIPZIG seems to have been greatly at variance with the views of Napoleon, who sent him orders to hold MAGDEBURGH and the LOWER ELBE. Then comes the further advance of the Russians and their Allies, followed by the action of Möckern and the retreat of the Prince to the position on the Saal.

Talks with a young Squadron Commander.—In the guise of advice given by a retired officer to a young one about to be promoted to the command of a Squadron, the

author gives in the numbers for January, March, April, May, August and September a series of lectures on the Squadron. Though a good many of the remarks apply only to the details of a Russian Squadron, the greater part are equally applicable in any service.

The article is full of sound advice and contains many practical hints on interior economy, stable management, shoeing and the care of horse-flesh on the line of march. The special training of scouts, and of as many as possible in each Squadron is especially insisted on, and the necessity of an officer keeping himself thoroughly 'au fait' and up to date in all details of both the theory and practice of his profession.

Notes on the French Army.—In the numbers for January to March, the author gives a short sketch, dealing chiefly with the officering of the French Army and the bad effects on recruiting which the introduction of two years' service with the colours is likely to produce, especially in a country where the question of population is so serious.

He considers there is much too great a distinction made between the officers who have been trained in the Military Schools, and those who have risen from the ranks, and gives a strongly coloured picture of the luxury prevalent among the senior non-commissioned officers.

In connection with the Kokand Expedition.—Two articles in the numbers for January and February giving a short description of the disturbances in KOKAND in October 1875, and the exploits of Kalandar Khan which led to the despatch of a punitive expedition from SAMARKAND and KHOJEND.

The chief feature of the operations appears to have been the success attained by Captain Arendarenko's native levies.

The Elements of Field fortification.—An interesting article in the numbers for January to April inclusive. The author, though not producing anything very new or startling, considers his subject carefully and puts forward some sound arguments in favour of increasing the number of intrenching tools carried in the Russian Army, and the more thorough study of the science by Infantry officers, who are too inclined to consider it a matter of interest only to the Sappers.

He also points out that in this connection the Russian Army have the great advantage of having a very large

proportion of agriculturists in the ranks to whom such work should come the more easily.

The Medical Establishments of Foreign Armies.—Appears in January and February numbers. Beginning with a description of the Military Medical Establishments in France, Germany and Austria, the author goes on to compare these with that of Russia to the disadvantage of the latter. His main point is that while only in France, and even there not to the full extent desirable, is the sanitary administration in the hands of the medical authorities, still in all these Armies here considered, the medical as apart from the Sanitary Administration is in their hands, while in Russia both the Sanitary and Medical Administrations are under officials having no connection with the doctors, or understanding of the demands of Sanitary or Medical science.

By the Afghan Border.—A description running through all the numbers under notice except those for April and June, of a journey from ZULFIKAR to KUSLEK, thence by rail to CHARJHUI and from there down the Oxus by steamer. It contains short accounts from a Russian point of view of the PANJDEH affair and the Afghan Army, and some interesting descriptions of the country and the Oxus flotilla; also notes on politics, irrigation and ethnology—the reproduction of which space will not admit of.

The Organization of Military communications.—In the numbers from March to June, the author of this article writes at length on the subject of railways.

Though considering in detail methods for the improvement of goods traffic in peace time, he contends that the primary object of railways is their utility in time of war, to which everything must give way. He is strong on State control and the Militarisation of Railways.

His chief points may be summarised as follows :—

One Central Board of control is better than a Central Board and affiliated Local Boards, for the distribution of rolling-stock. The collection and centralisation of information and statistics as regards rolling-stock are necessary, so that Government may know at any given moment how much they can lay their hands on and how it is distributed.

Unification of gauge and classification of rolling stock is essential.

Russian railways have the advantage over most foreign systems in the matter of control and militarisation, but there is a marked deficiency of rolling stock.

The author then goes on to consider in detail, technicalities in connection with points, platforms, turn-tables, etc., with a view to the saving of time in the loading, unloading and despatch of goods.

He eulogises the system of railway guards introduced on some of the Russian lines.

Coast Fortresses.—In the numbers for May, June and July.

This is an answer to a previous article advocating the handing over of Coast Defences to the Navy.

The author's point is that Coast Fortresses must be independent and able to protect themselves without the aid of the fleet; in support of which he quotes the opinion of various Naval Authorities, and that the Fleet must be given no excuse to tie themselves to the Coast Defences, which they would be very inclined to do if they felt themselves responsible for their safety. The Fleet should go and meet the enemy on the open sea. In this connection the author quotes the saying of Admiral Cooper Key, that nothing would please him so much as to hear that the French and Germans had handed over their Coast Defences to the Navy, as there would be so many more men tied up ashore in time of war.

The author considers coast defence ships superfluous, and remarks that the submarine mines must of course be under the same control as the coast fortresses, the guns of which will have to protect them.

Contemporary seesaw of opinions on Cavalry.—This article, in the numbers for June and July is one of the most interesting of the lot, and one to which justice cannot adequately be done in a limited space.

The following, however, gives the gist of the article.

After many ups and downs the Russian Cavalry is still in an unsatisfactory condition.

The system under which Cavalry leaders arrange for the purchase of their own fodder and forage is wrong, and leads to many abuses. Grossness of condition comes to be considered a criterion of good management, and failing this, the officers in command are looked at askance.

Racing is taken exception to. By all means have thorough-breds, but let them be used for their legitimate work, and not kept for racing; a sport which can never be indulged in except by the few. Sports should be introduced of a sort in which all can join. Racing only means that a few officers ride, whose keenness for sport soon degenerates into a keenness for praise, while the majority merely indulge in an unhealthy excitement over the totalisator.

From the various figures giving the number of men "employed" &c., the following is worked out—

In an average Squadron in winter—

52 men groom	...	...	1 horse each.
6 " "	...	...	3 horses "
24 " "	...	...	67 " between them.

From this it is argued that neither can the grooming be properly done, nor can the various courses of instruction which the men are supposed to be undergoing be more than a farce.

Scouts are trained under Cornets, who often know nothing of their job and the scouting generally is most inferior.

Information given is sketchy and badly compiled.

The general training of the Cavalry is on wrong lines, practically no attention is paid to the working of Cavalry with other arms. Effort is directed far too much to the manœuvring of huge masses of Cavalry which could never be employed, except on a few selected drill grounds.

The Cossack Lava has degenerated into simply a long line, good for nothing, but show purposes. The original speciality of a deep yielding centre, which draws on the enemy till he finds himself surrounded by the widely extended mobile flanks, the commanders of the different portions working together with a mutual understanding of the object aimed at, is lost sight of.

Very insufficient use is made of the Horse Artillery, which is kept back till too late to be of any use, the increase of range of modern guns not being taken into account.

Finally there is the "one more thing needful" and that is the special selection and training of officers, who should be thoroughly competent and keen, educated not only in all the details of their profession, but well up in general knowledge. They should study all the questions of the day.

The following figures give an idea of the effect on the Russian Cavalry of extra regimental employment, &c., and transfer to the Infantry of Officers.

1893 to 1903.

Average appointments to the Cavalry	...	...	229
„ casualties, retirements, &c.	...	67	
„ decrease, due to extra regimental employment, &c.	...	139	
		—	206

Further figures also show that there has been a slight improvement in this, since the raising of the cavalry pay in 1899.

“The fight with shields”.—(January number). A short consideration of the best means to counteract the introduction of shields for Field Artillery. The author advocates elongated and hardened shrapnel bullets, which will be able to penetrate any shields not too heavy to carry in the field.

“The working capacity of the Russian Cavalry”.—(February number). A paper read at WARSAW in 1903, before the officers of the General Staff. A comparison is drawn between the generality of horses in the Russian and Foreign armies, not altogether to the advantage of the former. A plea is put forward for more attention being paid to “blood” and objection is taken to the showing of horses at inspections in gross condition.

“Japanese Tactics”.—(May number). This article is especially interesting as giving a forecast, written before the commencement of the land operations. The author considers the Japanese marvellous in the detailed preparation for expected contingencies, but that they are likely to prove themselves quite incompetent to meet unforeseen eventualities and have little idea of strategy.

The following are his further remarks on the Japanese:—

Infantry.—Very good in every way.

Cavalry.—Inferior, both in quality and quantity.

Artillery.—Immobile. Slow in taking up and changing position. Unable to attain to a rapid rate of fire.

Engineers.—Good, quick and thorough, but unable to adapt their works to the necessities of the ground.

Scouting.—Good and accurate, but limited in extent by want of sufficient Cavalry.

Rate of marching.—Very slow.

An inordinate amount of Transport is required.

Advanced guards are generally too far ahead of the main body and columns commonly march so far behind one another that they lay themselves open to be beaten in detail.

"Sugar as a feed for horses"—(July number). A short article advocating sugar as part of the regular feed for military horses, and suggesting that at least extended experiments should be made in this direction. Contrary to the common idea that sugar tends to induce thirst, the author holds that the reverse is the case, and produces some statistics in support of his contention.

"Extended Cavalry rides"—(October number). The author argues that though considerable success has been attained in individual long distance rides, these are of little practical use to Cavalry, but, on the contrary, rather tend to give officers a false idea of time and space when it comes to marching with troops, where the pace of the whole must be the pace of the slowest and the well known extra work entailed on the rear of a column has to be taken into account.

The article goes on to give some excellent advice for long distance marches and the preparation of horses for them.

"On Artillery positions".—An article in the September and October numbers, giving a series of problems and their solutions, with sketches, dealing with the dependence of the selection of positions on the opening of fire before or after the enemy, and the use of auxiliary marks.

"Temporary fortifications".—An article in the September and October numbers. Gives a sketch of modern types in various countries, arguing that among foreign types the German is the best and considers the Russian type remarkable chiefly for the development of flanking fire.

Command Essay Competitions.

The following are the subjects of the "Command Essay Competition," as arranged by Command Sub-Councils:—

PUNJAB COMMAND.

"The education of officers, with reference to the most suitable methods to be employed in regiments; and to include the question of Military Libraries, their systems, cost and maintenance."

BENGAL COMMAND.

"The circumstances which determined such extensive employment of Mounted Troops in the later phases of the Boer War, and the probability of their recurrence in the future wars of the Empire."

MADRAS COMMAND.

"How can the conditions of peace training, in all its phases, be best approximated to those of active service?"

BOMBAY COMMAND.

"A narrative of the leading events of the Russo-Japanese War of 1904 up to and including the 31st August 1904; with remarks on the possible future resultant changes in Tactics; and criticising any leading features of Strategy or Tactics which have occurred during the campaign."

BURMA COMMAND.

"Mounted Infantry Tactics in hilly and densely wooded country such as is met with in Upper Burma and the Shan States."

Dates in which competitions close—

Punjab	...	...	1st March 1905.
Bengal	}	...	...
Madras		...	... <i>Closed.</i>
Bombay		...	...
Burma	...	...	* *

The winning Essay in each Command will be published in the Journal of the United Service Institution of India.

United Service Institution of India.

Prize Essay Gold Medallists.

1872.....ROBERTS, Lieut.-Col. F. S., V.C., C.B., R.A.

1873.....COLQUHOUN, Capt. J. A. S., R.A.

1874.....COLQUHOUN, Capt. J. A. S., R.A.

1879.....ST. JOHN, Maj. O. B. C., R.E.

1880.....BARROW, Lieut. E. G., 7th Bengal Infantry.

1882.....MASON, Lieut. A. H., R.E.

1883.....COLLEN, Maj. E. H. H., S.C.

1884.....BARROW, Capt. E. G., 7th Bengal Infantry.

1887.....YATE, Lieut. A. C., 27th Baluch Infantry.

1888.....MAUDE, Capt. F. N., R.E.

YOUNG, Maj. G. F., 24th P. I. (specially awarded a silver medal).

1889.....DUFF, Capt. B., 9th Bengal Infantry.

1890.....MAGUIRE, Capt. C. M., 2nd Cav., Hyderabad Contingent.

1891.....CARDEW, Lieut. F. G., 10th Bengal Lancers.

1893.....BULLOCK, Maj. G. M., Devonshire Regt.

1894.....CARTER, Capt. F. C., Northumberland Fusiliers.

1895.....NEVILLE, Lieut.-Col. J. P. C., 14th Bengal Lancers.

1896.....BINGLEY, Capt. A. H., 7th Bengal Infantry.

1897.....NAPIER, Capt. G. S. F., Oxfordshire L. I.

1898.....MULLALY, Maj. H., R.E.

CLAY, Capt. C. H., 43rd Gurkha Rifles (specially awarded a silver medal).

1899.....NEVILLE, Col. J. P. C., S.C.

1900.....THUILLIER, Capt. H. F., R.E.

LUBBOCK, Capt. G., R.E. (specially awarded a silver medal).

1901.....RANKEN, Lieut.-Col. G. P., 46th Punjab Infantry.

1902.....TURNER, Capt. H. H. F., 2nd Bengal Lancers.

1903.....HAMILTON, Maj. W. G., D.S.O., Norfolk Regt.

BOND, Capt. R. F. G., R.E. (specially awarded a silver medal).

1904.....MACMUNN, Maj. G. F., D.S.O., R.F.A.

MacGregor Memorial Silver Medallists.

- 1889.....BELL, Col. M. S., V.C., R.E. (specially awarded a gold medal).
- 1890.....YOUNGHUSBAND, Capt. F. E., K. Dn. Gds.
- 1891.....SAWYER, Maj. H. A., 45th Sikhs.
RAMZAN KHAN, Havildar, 3rd Sikhs.
- 1892.....VAUGHAN, Capt. H. B., 7th Bengal Infantry.
JAGGAT SINGH, Havildar, 19th P. I.
- 1893.....BOWER, Capt. H., 17th Bengal Cavalry (specially awarded a gold medal).
FAZALDAD KHAN, Dafadar, 17th B. C.
- 1894.....O'SULLIVAN, Maj. G. H. W., R.E.
MULL SINGH, Sowar, 6th B. C.
- 1895.....DAVIES, Capt. H. R., Oxfordshire L. I.
GUNGA DYAL SINGH, Havildar, 2nd Rajputs.
- 1896.....COCKERILL, Lieut. G. K., 28th Punjab Infantry.
GHULAM NABI, Sepoy, Q. O. Corps of Guides.
- 1897.....SWAYNE, Capt. E. J. E., 16th Rajput Infantry.
SHAHZAD MIR, Dafadar, 11th B. L.
- 1898.....WALKER, Capt. H. B., Duke of Cornwall's L. I.
ADAM KHAN, Havildar, Q. O. Corps of Guides.
- 1899.....DOUGLAS, Capt. J. A., 2nd B. L.
MIHR DIN, Naik, Bengal S. and M.
- 1900.....WINGATE, Capt. A. W. S., 14th B. L.
GURDIT SINGH, Havildar, 45th Sikhs.
- 1901.....BURTON, Major E. B., 17th B. L.
SUNDER SINGH, Colr. Havildar, 31st Burma Infantry.
- 1902.....RAY, CAPTAIN M. R. E., 7th Rajput Infantry.
TILBIR BHANDARI, HAVILDAR, 9th Gurkha Rifles.
- 1903.....MANIFOLD, Lieut.-Col. C. C., I.M.S.
GHULAM HUSSAIN, Lance-Dafadar, Q. O. Corps of Guides.
- 1904.....FRASER, Captain L. D., R.G.A.
MOGHAL BAZ, Dafadar, Q. O. Corps of Guides.

The Journal

OF THE

United Service Institution of India.

VOL. XXXIV.

APRIL 1905.

NO. 159.

WINNING ESSAY FOR THE BENGAL COMMAND PRIZE, 1904.

BY MAJOR H. F. LOCH, 1ST BRAHMANS.

Subject.

"The circumstances which determined such extensive employment of mounted troops in the latter phases of the Boer War, and probability of their recurrence in the future wars of the empire."

"The lesson drawn from the first Boer war by General Gordon, the defender of Khartum, that the Boers should be fought in their own way, namely, by mounted riflemen under specially selected leaders, whom the English troops of the line were to follow as a reserve, had been completely forgotten."

The German Official Account of the war in South Africa. October, 1899, to February, 1900. Trans, page 34.

It is not within the province of this paper to discuss whether the lesson, quoted above, had or had not been completely forgotten. Incidentally, however, it may be pointed out that the German Official Account deals with the first period of the war only, a period during which it is generally admitted, the troops sent to South Africa were inadequate for the task which they were expected to perform. With the arrival of General Lord Roberts and reinforcements at the Cape, it

became obvious that this lesson had not been altogether forgotten, for it was one of Lord Roberts's first steps to increase the available mounted troops by turning one company from each infantry regiment into mounted infantry; and from now, on to the close of the war, we see that reinforcements of mounted men from the Colonies were gladly accepted, mounted troops were raised from the Colonists of the Cape and Natal and even from amongst the Boers themselves, and as animals become available the number of mounted troops is constantly increased, until, at the very last, we see the artilleryman leaving his guns behind and playing the role of mounted infantryman. In fact, the whole course of the late war goes to prove the soundness of the lesson drawn by General Gordon from the 1881 campaign; and the final operations of the war prove that we had learnt that lesson, whatever might have been the case during the initial phase of the war.

The circumstances, therefore, which necessitated the extensive employment of mounted troops in the latter phases of the war, were 'in being' at the commencement of the war, and in fact existed as far back as 1881, as the above quotation shews. We must therefore search for these circumstances and their causes in the people and in the country, in the personal characteristics of the Boers, in their method of fighting, and in the peculiar natural features of their country.

So much has been written about the Boer and his characteristics that it seems almost superfluous to enter on them here, but at the risk of being tedious, I must briefly recapitulate them, as they had their effect on the war throughout.

The Boers as the pioneers of civilisation in South Africa, pushing forward and acquiring property in the midst of a numerically superior and often hostile black population, went with their lives in their hands, and often, it was only their brave hearts and their good rifles which stood between them and destruction. Such a life, of necessity, made every man an expert rifleman, and taught them self-reliance and independence. The boys from childhood learnt to handle and to use the rifle, and constant practice on the game with which the country swarmed, as well as more distant hunting and exploring expeditions when they reached manhood, made them marksmen whose equals could only be found in the back woods of America, and in countries where life is lived under semi-civilised, almost savage, conditions. Then, too, as members of the Boer community they were compelled, as soon

as they were old enough, to serve the community in its wars with the neighbouring tribes, so that every male Boer was by early manhood half soldier, half hunter. This was especially the case before 1881. Between 1881 and 1899, 'time' had made some, but not many, changes in the Boer and his country. The population had increased, railways had opened up the country, towns had sprung up, and with this influx of civilisation, Boer life, at least where it came under the influence of the towns and railways, became a good deal modified, and many of the rising generation of Boers had not acquired those military qualities, which the hunting, roving, fighting life had instilled into their forefathers, whilst, chiefly owing to the decrease of game in the country, their marksmanship as compared with that of their fathers had deteriorated. With these modifications their national forces were the same in 1899 as in 1881, with the exception that a small force of artillery and some modern guns had been added.

Besides being expert marksmen, the Boers were also horsemen, at least, in so far that almost every male possessed a horse and could ride. A horse was practically a necessity of their existence. Nearly all the Boer farms were of large extent, and mostly used for cattle and horse raising, with only sufficient cultivation to supply the needs of the house, and to feed the stock in bad seasons. To look after such a farm the Boer was obliged to have a horse. Then, too, the distances between farms, and between farms and the towns compelled every Boer to ride long distances whenever he left his farm, and it was no unusual thing for a Boer to ride 40 to 60 miles in the day. In all their expeditions, whether fighting the natives or hunting, a horse was almost as absolutely necessary as the rifle. These were the circumstances, and this was the training, which made every Boer capable of taking his place in the national forces. The Boer forces therefore, when called out for war, consisted of a large body, practically the whole community, of mounted infantry, combining a high degree of marksmanship with considerable mobility; and it is this mobility, perhaps more than any other cause, that necessitated an unusually large number of mounted troops being employed against them.

The combination of a high standard of marksmanship with great mobility, added to the circumstances under which the Boers lived, made them adopt a particular mode of fighting. A scanty population in the midst of numerically superior

blacks, they would soon have been 'wiped out' by weight of numbers, if they had allowed the blacks to close to 'hand to hand combat' with them. White lives were valuable, and the only way of preserving them was to keep the overwhelming numbers of the savages at a safe distance, and this they succeeded in doing in most of their conflicts with the black tribes, by their unerring use of the rifle. Their rifles outranged any firearms that the savages possessed, and in the attack they only advanced to within easy rifle range, trusting to secure victory by their fire effect, and the losses caused thereby. Counter attacks by the enemy they repulsed by their fire, or if that was unsuccessful they mounted their horses and were able to extricate themselves quickly from the fight, and easily defied the pursuit of men on foot. After repulse they retired by groups or individuals to some previously selected rendezvous, to renew the attack or withdraw entirely, according to the opinion of the majority. Failure in the attack never demoralised them because the attack was never driven home. In defence they took up as secure a position as they could, usually their waggon 'laager', and depended entirely on the accuracy and rapidity of their fire to keep the enemy at bay. Victory was rarely followed up; and when they were attacked they seem to have been satisfied with having driven off the enemy with little or no loss to themselves.

These were the tactics of the Boers. They had found them suitable to their country and against their savage foes, and these were the tactics they used when called on to face the British forces. We see their effect throughout the late war. Both in attack and defence the Boers relied on fire effect. There are few instances of the Boers attacking, and the attacks when made are rarely pushed home. Their particular 'forte' was selecting and intrenching a position, and then depending on their rifle fire to keep the enemy at a distance and inflict loss on him. Counter-attacks were unknown. In fact from a Boer point of view, a counter-attack was probably considered a useless waste of life, for, to carry it out, they must abandon all the advantages that the intrenched position had secured them. In retreat, owing to their mobility, they were able to get clear away without difficulty, before the pressure of the superior, but slower moving, British forces. It was their mobility, assisted to a certain extent by the long range of their rifles, and by the clear field of fire that the country usually afforded, which enabled them to vacate

position after position without being surrounded, and without being drawn into a decisive battle.

The independence and self-reliance of the individual, made the Boer an excellent scout, skirmisher, and irregular fighting-man, but these same qualities were often detrimental to success when combination was required for the success of some important enterprise, requiring unity of action from a large number of men. Every man had his say in the matter, and could join or withdraw from the enterprise as he pleased. There was no discipline to force the Burghers to carry out the will of their commander, and such a state of affairs prevented any large forces of the Boers working in concert, and lost them many opportunities during the first period of the war. It is only in the final phase of the war, when the organised forces of the Republics have been dispersed and split up into small guerilla bands, that we see the Boer at his best as a fighting man. Making a dash to surprise some weakly guarded point of the long line of British communications; rounding up some small isolated force; scattering and retreating rapidly if unforeseen resistance was encountered, or if superior forces appeared on the scene; this sort of fighting suited the character and training of the Boer. Want of discipline was not so detrimental in such warfare; or, perhaps it would be truer to say, that the various irregular bands, 'commandos' as they are still called, were, by that time, commanded by men whose force of character and powers of leadership had brought them to the front during the early stages of the war, and their authority was generally recognised by the Burghers forming the rank and file of these commandos; they were therefore able by their personal influence, and sometimes by the physical persuasion of the 'sjambok', to enforce a stricter discipline, and secure obedience in the smaller forces they commanded.

If we now turn to the country itself and examine its physical features, it appears to have been especially favourable for mounted infantry tactics. The open and treeless veldt could be traversed by mounted men almost anywhere, and the rocky kopjies cropping up from its surface offered admirable positions for defence, whilst the open nature of the country permitted the use of the modern long range rifle to its fullest extent. In some parts, folds and depressions in the ground, unsuspected by a casual observer, and known only to those acquainted with the country, afforded cover to the commandos, and men watching on the

adjacent Kopjies could see long distances and give early notice of the approach of any hostile force, so that preparation to fight or fly, according to the size of the approaching force, could be taken in time. In other parts, especially in the north, the valleys of the Magaliesberg gave comparatively safe and easily defended refuges, from which commandos could issue on unwary columns, or weakly guarded convoys. The great extent of the country, nearly as large as France, made it difficult to hem in and capture these bands, whilst the friendliness of the population, scanty though it was, gave the commandos every assistance in escaping pursuit by giving them information about the movements of the British columns, by furnishing them with supplies, both of food and horses whilst the farms were in some cases used as depôts for ammunition. The whole condition of the country was entirely favourable to prolonged guerilla warfare.

The second phase of the war begins with the advance under Lord Roberts. By this time we had superior forces in the field, and a large number of mounted troops. Our mounted troops were now able to outflank the extended positions occupied by the Boers, and threaten their line of retreat, so that they abandoned position after position, and the advance was continued without serious opposition. Pretoria was occupied, and the defeat and pursuit of the main Boer forces east of that town resulted in President Kruger flying into Portuguese territory, the Boer guns being destroyed and abandoned at Waterval-onder, and the Boer forces split up, for good and all, into small guerilla bands which never again united into a regular force. This was the commencement of the last phase of the war, a period of guerilla warfare.

That the war was not finished during the second phase was due to several reasons. In the first place, we must attribute to the mobility and constitution of the Boer forces the fact, that during this phase there never was a decisive battle. It is possible, that if the British could have gained one decisive battle, the third phase of the war would have been less acute. For, until the flight of Kruger, the Republican Government had some semblance of authority, and a crushing defeat might have brought about surrender, a surrender which the greater number of the Boers would have accepted. Such a fortunate result could only have been compared to the conclusion of the American Civil War. It has been

said, that when General Lee, with the remnant of his army broke out of Richmond in April 1865, it was proposed to him that his army should scatter through the country, and that guerilla warfare should thenceforth take the place of regular war. The war might thus have been prolonged for some years. But Lee had fought a good fight, and had done all that lay in his power to defend his country; he saw it reduced to the direst straits, and he also saw that although by resorting to guerilla warfare the war might be prolonged indefinitely, it would only be by a useless expenditure of life and destruction of property. The resources of the North must tell in the long run. He therefore surrendered with his whole force at Appomattox Court House on the 9th April 1865. His example was followed by the Commanders of the other forces of the South, and the general population acquiesced. The country was thus spared the misfortune of guerilla warfare following on four years of regular war. The Transvaal and Great Britain would have been fortunate if the war had been concluded in a similar manner in 1900, but, at the sametime, it is unreasonable to suppose that had a decisive defeat been followed by the surrender of the Boer Government, peace would have followed at once, and there would have been no third phase to the war. The teachings of history go to show that the third phase was inevitable, and the end of the American Civil War was an exception. For, in every large community there must always be a large number of dissentients who would be dissatisfied with the decision of the majority on such a vital question as the freedom of their country, and these having arms in their hands would carry on a guerilla warfare until they were captured or destroyed. This would certainly have been the case in the Boer community, where personal freedom of thought and action was a prerogative of the Burgher. But there can be little doubt that if the Boer Government had surrendered, our task in the third phase of the war would have been lightened, and it is possible that such a large number of troops, both mounted and dismounted, as was actually employed, would not have been required.

Then again our own leniency to the Boer in the second phase helped to furnish them with the men and the means to carry on the guerilla warfare of the final stage of the war. Burghers who surrendered were allowed to return to their farms, and as our forces were insufficient to afford everyone protection throughout such a large tract of country, many were

coerced into joining the commandos, and many more broke their oath and joined of their own freewill. Our forces did not destroy the farms, on which the stock, both cattle and horses, was left. These afforded the commandos shelter and subsistence, and provided them with fresh horses and cattle, whereby they could continue the war, or evade pursuit. Women and others were also left undisturbed on the farms, which more often than not, rendered the commandos valuable assistance by becoming posts for collecting and transmitting information. Considering all this, it is evident that the last phase of the war started under conditions most favourable to its long continuance, and it would no doubt have lasted longer than it did, had not mounted troops been available in such large numbers.

We may look upon the difficulties that we encountered, in the pacification of the two Republics, as common to all conquered countries, where the conqueror having dispersed the main forces of the State, attempts to restore order and establish his own government. The defeat of the armies of a State may be accomplished by a comparatively small force, but a much larger force is generally required to *pacify* the country, and the reason for this is, that there must always be a large number of malcontents, disbanded soldiers and others, who having arms in their hands and hatred to their conquerors in their hearts determine to withstand them or injure them if possible. They are patriots if they succeed, but become guerillas and sink to the level of bandits and dacoits, as their numbers and chances of success grow less. As the pacification proceeds, these malcontents retire to inaccessible thinly populated parts of the country and harass and annoy their conquerors by every means in their power, often wreaking vengeance on any of their own countrymen who give the conquerors assistance. After committing a raid they have the start of their pursuers, for the news of their movements seldom reaches the troops until it is some hours old, so that they have time to disperse and be miles away before the pursuit can be taken up. If hard pressed they can throw away or hide their arms and masquerade as simple countrymen. They have better intelligence than their pursuers, for they are in their own country, often amongst their own friends and relations, who secretly sympathise with them, give them every assistance, and warn them of the approach of the enemy. Infantry alone cannot deal with them, it moves too slowly to successfully hunt them down, even though they

are on foot. Considerable numbers of mounted troops must be added to make the pacification of the country a success. The infantry can then be scattered over the country in posts: they will be able to maintain order in their own immediate neighbourhood, protect the inhabitants, and serve as depots of supply to the mobile troops. If the rebels are mostly on foot, the mounted troops will gradually run them down, but the time the operations will take depends on the character of the people to be dealt with, and the area and physical features of the country over which they can wander. The greater the number of mobile troops employed the quicker will the desired result be obtained.

Our own experience in India after the Mutiny shows the necessity for considerable bodies of mounted troops, when a country has to be pacified. Several corps of irregular cavalry were raised on purpose to hunt down the rebels. The infantry could not catch them without this assistance. If the rebels stood in any of their strongholds the infantry did the work, but it fell almost entirely to the lot of the cavalry to chase those rebels who were constantly on the move and with whom our infantry could not come up.

Again take the pacification of Burma. At first, after the deportation of Theebaw, the country was so quiet that the responsible government considered a force of 1,000 Indian military police, besides the regular troops in the country, would be sufficient to maintain order in the newly annexed country. Unfortunately, here, as in the Transvaal, a lenient policy was carried out, and the Burmese soldiers who surrendered were allowed to return to their villages taking their arms with them. The natural result followed; men, who may have been patriots, but who were more often than not robbers or malcontents, disgusted with the new order of things which stopped their crimes and peculations, began to collect a following from amongst these soldiers, to defy the government and to commit lawless acts, and dacoits sprang up all over the country. To deal with this outbreak, a considerable increase was made in the number of regular troops, and about 1,000 men were taken from them and converted into mounted infantry. The military police were raised to about 16,000 men, and about 2,000 of them were turned into mounted infantry, and with these largely increased forces, and in a country where almost all the people of necessity go on foot or by boat, it took nearly three years and some 3,000 mounted men to put down the

rebels and dacoits. In both these cases the conquered people were Asiatics, they were not well armed nor were many of them mounted, and yet their suppression was only brought about by the employment of a considerable body of mounted troops in addition to infantry.

Now, the third phase of the war in the Transvaal resembles in its general conditions the pacification of India and Burma, with the exception that the foe are white men and they are better armed and all mounted. The natural conclusion seemed to be that in this phase of the war more troops, especially more mounted troops, would be required. It has been shown that at the beginning of the war an unusual proportion of mounted troops was required because of the mobility of the Boers, and these would be doubly necessary in the final stage, when they would have to act against the same people but scattered over a large area and fighting in guerilla fashion. Single columns of mounted men would be no good because they would, like the infantry in Burma, be simply following on the trail of a force that could out-march them completely, for in many cases the Boers had one or more spare horses with them. To deal with such a situation it was necessary to have three or more mounted columns working against each detached body of Boers, so that, in attempting to avoid one column they might run into the arms of another, and in order that these different columns should not be beaten in detail it was necessary that they should be of sufficient strength to withstand any likely concentration of Boers which might be suddenly brought against it. It is obvious that to do this the British mounted forces were necessarily unusually large.

One lesson that we must draw from this campaign is that, whatever nation we may go to war with, we must have mounted forces equal to, or, better still, superior to the mounted forces they can put in the field. If in any of the future wars of the Empire we encounter a people and conditions similar to those of South Africa we shall certainly require as many mounted troops. But looking around our frontiers and considering what nations we may come into conflict with in the future, there are none that exhibit these conditions. The Argentine Republic is perhaps one of the few countries where the conditions of life to some extent resemble those of South Africa, but so far as man can foresee, such a war is improbable. None of the countries adjacent to our Indian frontier, countries with which we might be at war at any time, exhibit conditions likely to

require excessive numbers of mounted troops. If we go to war with any of the civilised nations, the conditions are different. We shall certainly have to put as large mounted forces into the field as they do, but if we are victorious, it seems most unlikely that we will proceed to annex and pacify the country. Even if we do, it seems unlikely that we would require more mounted troops for the pacification of the country than we have had to put into the field to beat their armies, for the conditions are so different. The population is denser. Irregular warfare brings greater misery to a greater number. The people will neither have the arms nor the horses to enable them to resist like the Boers. It will be possible to locate disturbances to comparatively small areas which can be effectively dealt with by relatively small bodies of troops. The number of peaceable citizens, wealthy merchants and others whose trade is ruined by the war, will do all in their power to assist the restoration of peace, even though it be under an alien government, and these forces of civilisation will do much towards the pacification of the country and may prevent the employment of large bodies of troops.

To sum up. The conditions of life, among the Boers and the condition of their country were most favourable to guerilla warfare. This would in the ordinary course of events, that is the pacification of their country after conquest, have necessitated the employment of considerable forces of mounted troops. But it was the fact that they were all mounted, it was their mobility more than anything else, that compelled the British to make such extensive use of mounted troops.

The probability of a similar situation recurring seems remote, though if we come into conflict with a nation which can put large mounted forces into the field, we must, if we wish to conquer, be able to meet those forces with equal if not superior mounted troops.

THE EVOLUTION OF MODERN TACTICS.

PART III.

BY MAJOR G. GILBERT, 34TH SIKH PIONEERS.

Since the conclusion of the Great War terminated by the Peace of Utrecht, Europe had enjoyed a period of repose during a space of a quarter of a century. France had emerged from that war, in spite of many and crushing defeats, more powerful than she had been in the days of Turenne. She was the rising nation of Europe and she had acquired a political ascendancy on the continent to an extent which even the Emperors of the West had scarcely ever enjoyed. Her literature, her language, and her arts were assiduously and almost universally cultivated. Spain so powerful politically and so predominant commercially during the Thirty Years War, and even Austria victorious yet exhausted by the Turkish wars were both receding before her. Russia was only just emerging from barbarism and as yet had not come in contact with her. England was about to enter upon a terrific and protracted conflict with her for possession of the most desirable colonies in two continents and further to determine the mastery of the commercial and naval supremacy of the world. The French Army towards the middle of the eighteenth century mustered 150,000 men on a peace footing. It was the largest military force in Europe at that time and had the highest reputation. But nepotism in the higher commands was rampant and efficiency was greatly impaired. The Austrian Army had been allowed almost to disappear in spite of the entreaties and warnings of the aged and famous Eugene, a Frenchman who had spent his life in the Austrian service. All the armies of Europe had lost experience and efficiency during the prolonged inaction immediately preceding the Silesian War, 1740-45. But in one quarter of Europe, and one only, was there to be found some manifestation of military energy and efficiency and that quarter was Prussia. A small country, with a population rather less than five millions, she had no recognized place in the comity of Great Powers. The little notice she attracted in

international affairs at Paris or Vienna was due chiefly, if anything, to the eccentricities of Frederic William the Hohenzollern, who seemed to be possessed with a harmless mania for kidnapping gigantic men in every corner of Europe in order to feast his eyes on the magnificence of his grenadier battalions at his frequent reviews. To diplomatists of that day it must have seemed inconceivable that any serious danger could threaten from so small a State, which under the rule of George William, the contemporary of Gustavus Adolphus, had appeared so impotent and ridiculous in the eyes of all Europe. And yet behind the apparent mania there lay concealed a fixed and unsuspected purpose and Frederic William was but preparing a means to an end. The Crown of Austria was about to lose the province of Silesia to which the Hohenzollerns laid claim and which they maintained had been unjustly withheld from them by the House of Hapsburg. This eccentric and violent monarch was fashioning the instrument with which this was to be effected, and which he was about to bequeath to his energetic, determined and stormy son, Frederic the Great. Frederic William's father had left him a standing army of 34 000 men; he himself had increased that army to 84,000 men, the best drilled and disciplined troops in Europe. When his son succeeded him, the strength of the Prussian Army was raised to 100,000 men, a third less than that of France, but in precision of movement, mobility, discipline and ability to manœuvre it was superior to any two armies existing in Europe at the time. It stood in fact in these respects as pre-eminent as an effective military instrument as the army of Philip of Macedon had done twenty centuries earlier.

Before entering into a consideration of the tactical formations of the Prussian Army at this period, and their application in the field, it would be as well to glance at its system of organization. I have already in my first paper mentioned that in the early Republican period of Rome the legion was a brigade, the establishment being 4,200 infantry and 300 cavalry. When it was mobilized for service, the Senate through the Consuls called upon its Italian allies to furnish contingents of 4,200 infantry and 900 cavalry with each Roman legion placed in the field. On the termination of the Punic Wars all the States of Italy were merged in the Roman State and the coveted distinction of Roman citizenship was extended to them. The term "Allied Legion" ceased and the new designation "Double Legion" came into use.

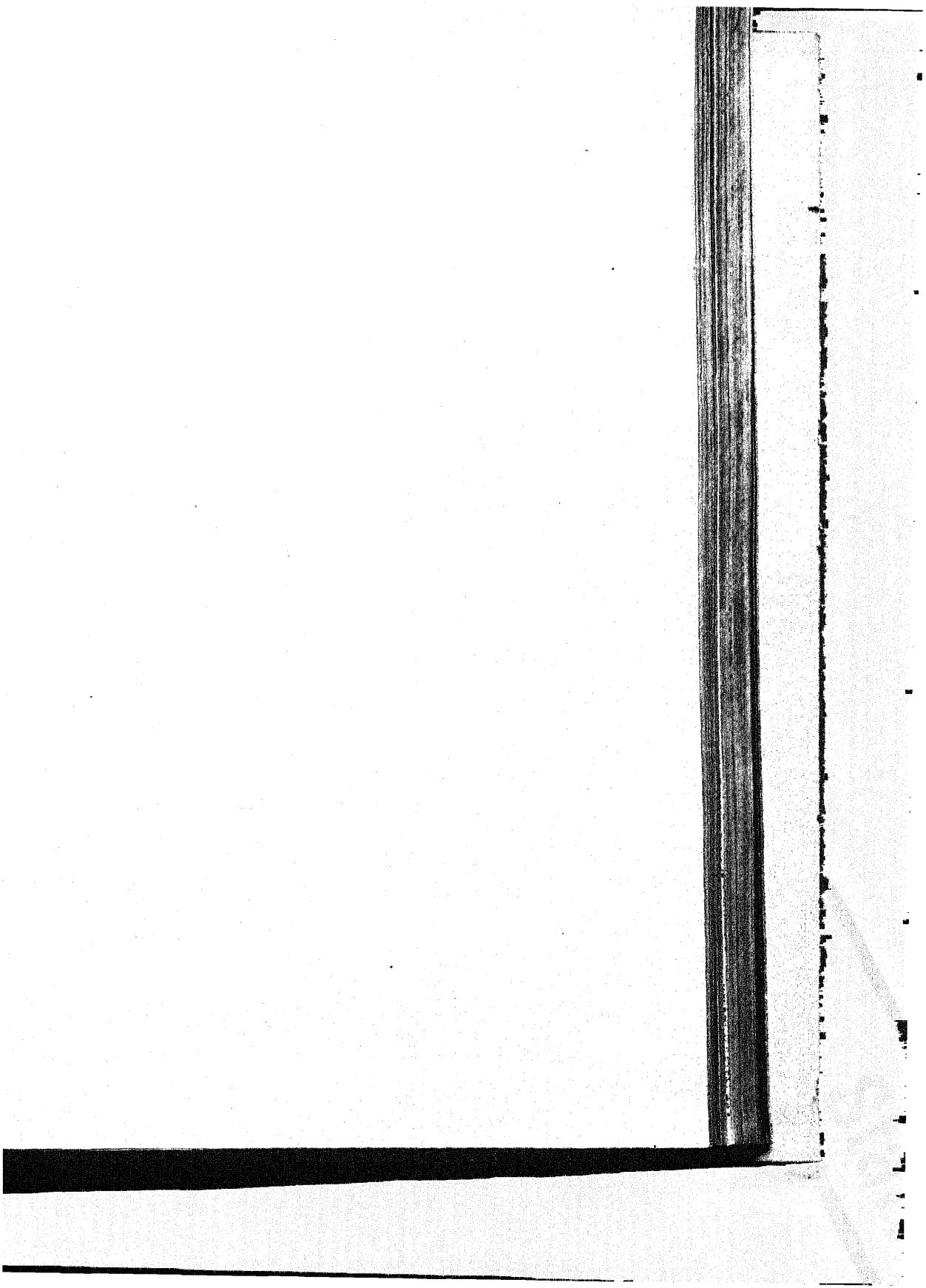
Later on, when the quarrel between Cæsar, then Pro-Consul of Trans-Alpine and Cis-Alpine Gaul, and Pompey, the mouth-piece and champion of the Senate culminated in the flight of the latter to the Eastern Provinces, Cæsar extended the citizenship to Gaul and Spain, being guided in this course partly by policy and partly as a mark of his esteem and gratitude to the magnificent legions that had for years followed his fortunes, embraced his cause in the Civil Wars and raised him to the proud position of Dictator and Arbiter of the world. From that time on throughout the Empire period the term "Double Legion" was dropped and that of "Legion" reverted to, but its strength continued to remain at from 8,000 to 10,000 men. The excellent system of organization of the Roman troops in maniples, cohorts and legions, maintained in garrison or in the field disappeared in the general crash of the proud Empire of which it was an outgrowth. Nothing approaching it in perfection was seen in Europe until Gustavus reorganised the Swedish army in fixed establishments of companies, battalions, regiments and brigades or demi-brigades. With two such excellent antecedent systems of organic structure it is surprising to find the armies of Europe in the middle of the eighteenth century labouring under the disadvantageous structural defect of having no intervening tactical unit between the battalion and the entire army. There were neither brigades, nor divisions, nor army corps. These were to be created later by the profoundest and most consummate master of his profession of whom we have cognizance in history. The Prussian Army in common with the other armies of Europe consisted of a heterogeneous collection of battalions of infantry, regiments of cavalry, batteries of artillery and some light regimental pieces. Had its organization been modelled on that of the Romans or of Gustavus, it would, I think, have been the means of achieving much more startling results than were actually obtained in the Seven Years War. Instead of merely defeating again and again the ponderous and passive Austrian armies, Frederic might have destroyed them. The Prussian system in point of rigidity and inflexibility was, it seems to me, a reversion to the Macedonian type of tactical cohesiveness. The entire army marched, deployed, broke into column and again wheeled into line precisely as our battalion does at the present day in close order drill. In the distribution of commands so many battalions were told off to this or that commander who had a recognized place on the line of march or in line of battle either

on the right, centre, or left of each line. Similarly with the cavalry, so many squadrons were told off to particular cavalry leaders whose commands were constantly fluctuating in strength. But all Europe had followed the lead of Gustavus in the matter of artillery. It had become the practice to attach two light pieces, three or six pounders, to each regiment and to have a reserve of heavier cannon, generally twelve or eighteen pounders, in varying proportions and under the immediate orders of the commander-in-chief of the army. In the course of the Seven Years War as the quality of his infantry deteriorated Frederic paid more and more attention to his artillery. At Hochkirch he saved the day with his artillery and at Rossbach its excellent co-operation with Seidlitz's cavalry charge shows an immense development in its offensive power. To Frederic belongs the credit of having initiated the system of mounting gunners on horses as postilions. This he did in June 1759 in a reconnaissance into Bohemia, when he attached four guns to the cavalry with the gunners mounted in this fashion experimentally. It was found highly successful and presently the idea was copied by all the armies of Europe. The Prussian infantry and cavalry was almost invariably drawn up in two lines without a reserve, a tactical disposition entirely at variance with established principles, and one which landed Frederic in serious difficulties on more than one occasion particularly at Hochkirch. Inferiority in numerical strength which has been ascribed as a reason cannot be pleaded as a justification for so serious and systematic a neglect of tactical principles. And in the conduct of all his battles throughout the nineteen years intervening between Mollwitz and Torgau it is to be observed that Frederic does not rectify this error nor does he deviate from his method in the slightest degree, which is surprising.

The Prussian infantry when deployed stood in three ranks with small intervals between battalions. The cavalry was similarly deployed on the flanks and Frederic resorted to the practice, which was initiated at Pharsalus and invariably adhered to by Gustavus, of posting small bodies of infantry in the intervals of the cavalry line to stiffen it and by doing so he staved off disaster at Mollwitz. The infantry was armed with the smooth-bore musket with an effective range of under 200 yards; and the artillery with smooth-bore muzzle-loading guns with an effective range of about three quarters of a mile. Prince Leopold of Anhalt-Dessau in the Prussian service had invented an iron ramrod which was adopted in the

reign of Frederic William and this gave the Prussian infantry a decided advantage in facility of loading. Another important innovation in the same reign was started, namely, peace manœuvres which now are so commonly and universally practised in preparing large bodies of troops for the actualities of war. In the Prussian Army the very greatest importance was attached to precision of movement and handling of arms. As many as 30 to 40 battalions in column of companies deployed to the right or left or to both flanks, then broke into column of companies to the right or left, marched off preserving pace and interval and then reformed line by a simultaneous wheel of companies with a precision and exactitude unattainable by any other army at that time and perhaps never excelled by any since. It was this mobility and facility of manœuvre which gave the Prussian Army such an immense advantage over its adversaries and enabled Frederic to execute movements to a flank after deployment so frequently and systematically, and often with such marked success as to cause the *oblique order of battle* to be for ever associated with his name.

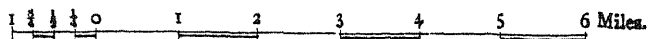
When Alexander at Arbela, for the first time recorded in history, executed the oblique order of attack, he moved his entire army as one unit at a given signal. Frederic's method was essentially the same, but whereas the Macedonian phalanx on this occasion turned to its right and marched off right flank leading on a front of 16 men, the Prussian Army invariably broke into column to one or the other flank. On gaining the required position the Macedonian Army had therefore merely to halt and turn to its front. The Prussians, on the other hand, were obliged to wheel into line in the required direction. In either case the essence of the movement lay in the most thorough precision and exactitude of drill. If anything, the Prussian mode was the more difficult of the two. For if the directing guides lost or gained ever so little distance between companies or battalions, the eventual wheel into line to face the enemy again would present either a huddled crowd or a line torn to tatters. Quite apart from natural obstacles and topographical difficulties the success of such an offensive movement would obviously have to depend on the character and quality of the enemy and on freedom from molestation whilst executing the march. Further it would depend also on whether the movement partook of the nature of a surprise or whether it was performed in the face of the enemy. At the battle of Prague, (see plan), Frederic's manœuvre was successful



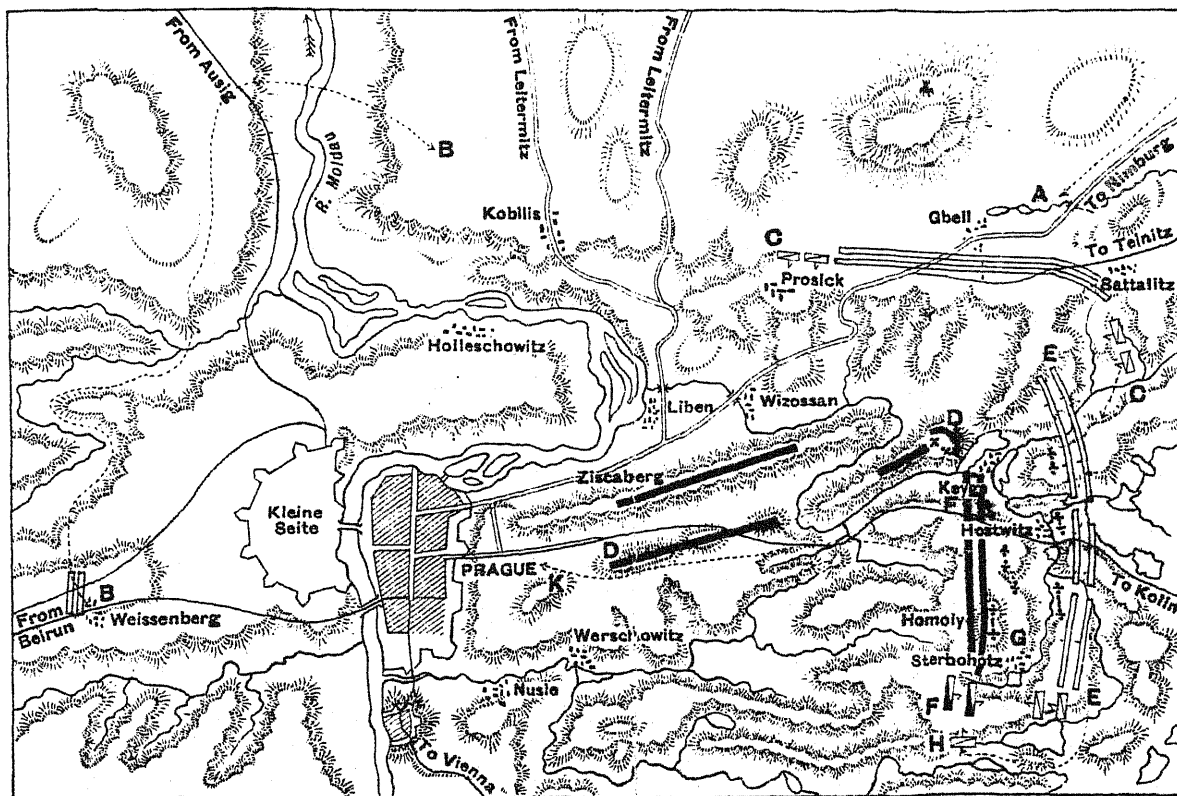
THE BATTLE OF PRAGUE.

8th May, 1757.

SCALE OF MILES.



R.F. $\frac{1}{144,000}$

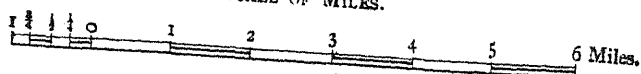


- A. Prussian centre column—Bevern, 18,000 Infantry and 5,000 Cavalry having united with Left column, Schwerin 32,000 foot and 12,000 horse marching on Prague.
- B. Right column—Frederic, 60,000 men. Frederic leaves Keith with 30,000 at Weissenberg, and effects junction with Schwerin unopposed at Prosick.
- C. Prussian Army 97,000—1st position.
- D. Austrians under Prince Charles of Lorraine, 60,000—1st position.
- E. Flank march of Prussian Army and 2nd position.
- F. Austrian 2nd position.
- G. Austrians mass a great battery on Homoly Hill.
- H. Zeithen charges Austrian Cavalry and Homoly battery in flank.
- K. Austrians retreat into Prague. Prussian losses 18,000, Austrian 24,000.

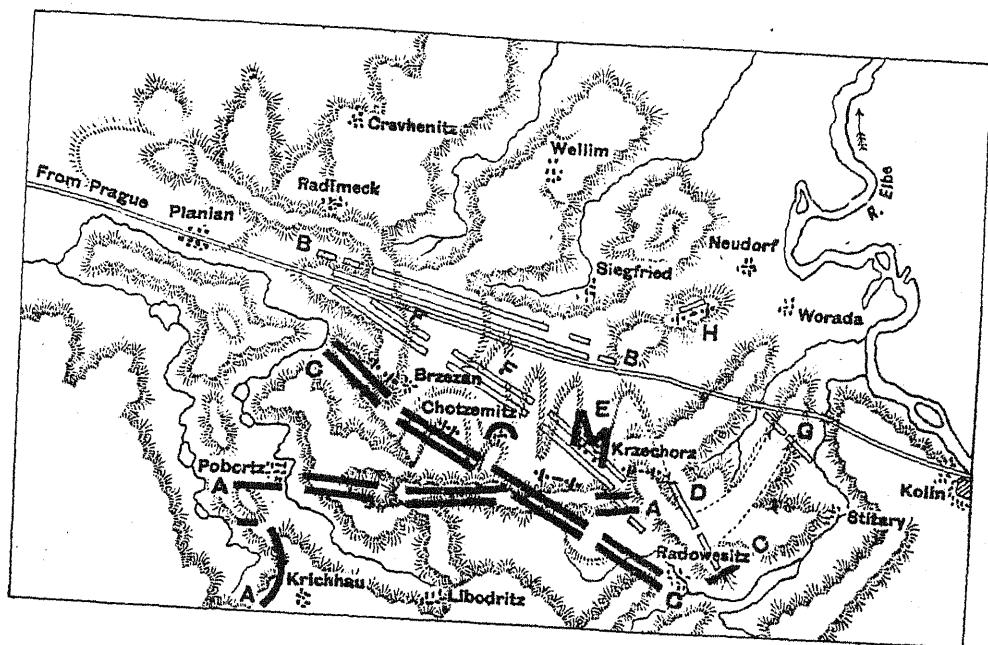
THE BATTLE OF KOLIN.

18th June, 1757.

SCALE OF MILES.



R.F. $\frac{1}{144,000}$



- A. Austrian army, 60,000 men, under Daun with 180 guns—1st position.
- B. Prussians under Frederic, 34,000 (18,000 Cavalry) 100 guns—1st position. Frederic decides to turn Austrian right flank and heads towards Rodosowitz.
- C. Daun's 2nd position.
- D. Zeithen leading gets isolated as Daun's Croat Skirmishers in village of Krzechorz and Chotzemitz annoy the flanks of Hulsen's and Manstein's battalions as they march across, and they wheel to right and attack.
- E. Hulsen carries the village but is checked.
- F. Manstein and right wing also checked.
- G. Zeithen driven back. Prussian army withdraws its 1st position. Prussian losses 13,773, Austrian 8,000.

though carried out in full view of the enemy, had ample time to form a new front at Keyge-Sterboholz. On this occasion, committed to a frontal attack and having gained a victory by sheer hard fighting, the Austrian commander been more successful in grasping the true solution to the problem, in execution with the quick resolution of Frederick, he would have held the Prussians on the line Keyge-Sterboholz ; he would have moved his army in movement rapidly up the line, and have seized the Prosick-Sattow, severing the communications of the enemy, and have assailed its right flank. Such was Frederick's habitual move on the day of the battle. A mere passive chance to arrest the enemy's advance or counter-attack, but a vigorous counter-attack in the face of the enemy, have deprived him, at one stroke, of his communications, and perhaps of organization. It is observed that Frederick failed on the day of the battle to provide against such a contingency as the lessons of Türkheim. Keitel's movement was simply wasted. The enemy's concentration, between him and his main body, he was unable to effect nothing. If anywhere, it was at Prosick. By disseminating his army, he committed a grave violation of the fundamental principle of war, which postulates concentration of all arms.

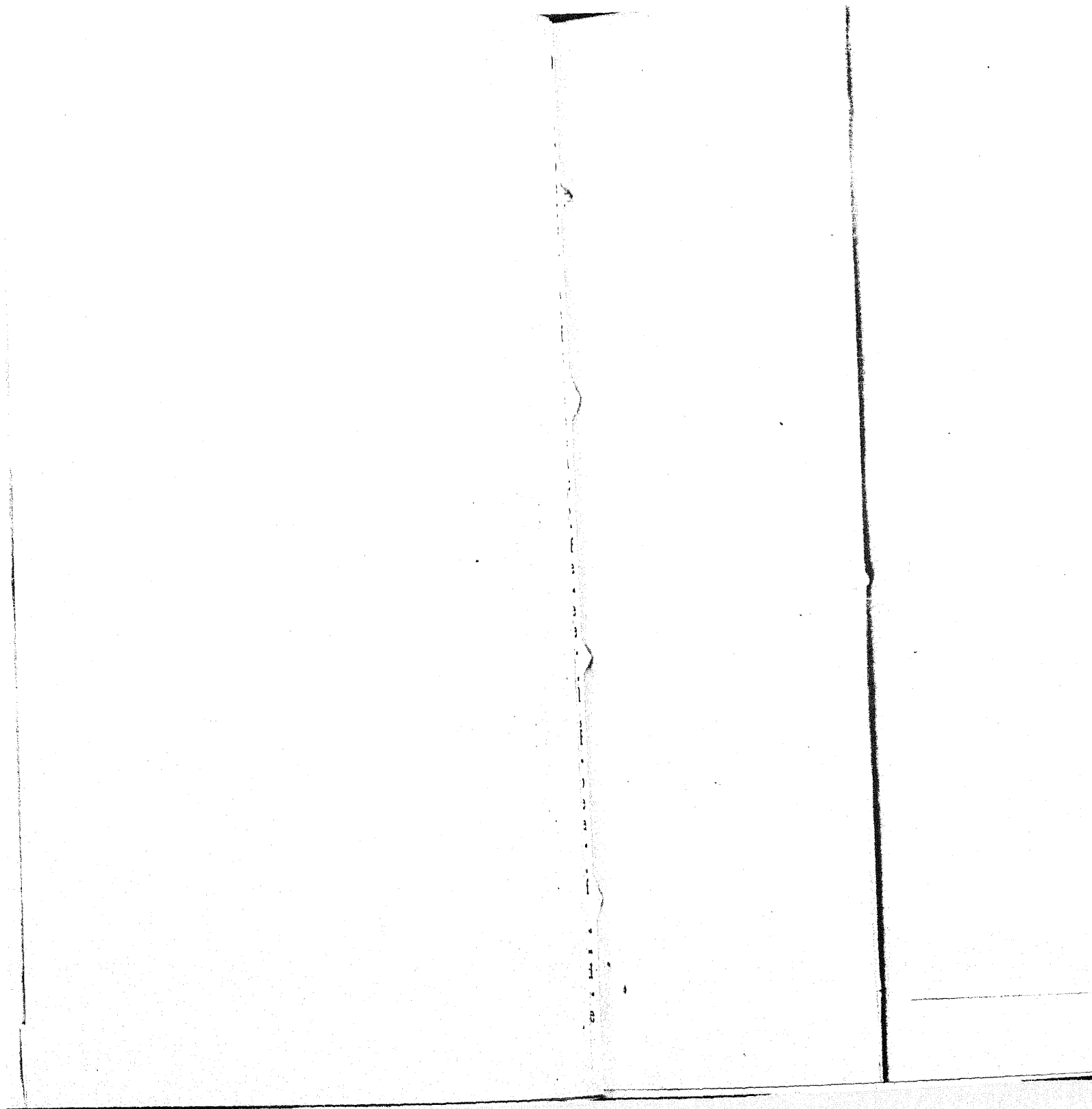
Then again an army whilst engaged in a defensive nature in the presence of an enemy, is singularly vulnerable if struck on the flank. At Kolin. The daring displayed by the Prussians, a rash contempt for the Austrian's tactical œuvre. He even ostentatiously exposed flank with skirmishers. A commander of no mean calibre, with his infantrymen well out. They were so persistently and successfully assailed by the battalions, in self-defence, to the point of action. The battalions in rear, those in front marched on. This was the result of Frederick's tactical plan.

though carried out in full view of the Austrian general who had ample time to form a new front to meet it on the line Keyge-Sterboholz. On this occasion the Prussians though committed to a frontal attack across unfavourable ground, gained a victory by sheer hard fighting at immense cost. Had the Austrian commander been mentally capable of instantly grasping the true solution to the situation and of putting it in execution with the quick resolve of the victor of Breitenfeld, he would have held the Prussians with a small force, on the line Keyge-Sterboholz; he would have set the bulk of his army in movement rapidly up the Teinitz road; he would have seized the Prosick-Sattalitz highlands, and thus severing the communications of the Prussian Army he would have assailed its right flank. Such alone was the true reply to Frederic's habitual move on the chess board, the only mate to his check. A mere passive change of front might at most arrest the enemy's advance or compel him to recoil baffled; but a vigorous counter-attack in the direction indicated would have deprived him, at one stroke of the initiative, of communications, and perhaps of organized existence itself. It will be observed that Frederic failed on this as on every other occasion to provide against such a contingency notwithstanding the lessons of Türkheim. Keith with 30,000 men at Weissenfels was simply wasted. With an unfordable river, a fortress, and the enemy's concentrated army interposed between him and his main body he might reasonably be expected to effect nothing. If anywhere, Keith should have been at Prosick. By disseminating his forces, Frederic committed a grave violation of the fundamental principle in war which postulates concentration of all available troops for battle.

Then again an army whilst executing a flank march of this nature in the presence of an enemy in position rendered itself singularly vulnerable if struck in flank. This occurred at Kolin. The daring displayed here by Frederic indicates a rash contempt for the Austrian's mobility and power of manoeuvre. He even ostentatiously scorned to protect his exposed flank with skirmishers. On the other hand, Daun, a commander of no mean order, pushed his Croat light infantrymen well out. They annoyed the Prussian column so persistently and successfully as to compel Manstein's battalions, in self-defence, to wheel into line and come into action. The battalions in rear conformed with the movement; those in front marched on. This resulted in a complete dislocation of Frederic's tactical plans. He was compelled into a

course of action in engaging in a frontal attack against superior forces which was the very contingency he had sought to avoid. In fact the degree of offensive power of an army on the defensive and the skill of its commander is a measure of the danger attaching to any such offensive movement. At Rossbach, (see plan), the extreme vulnerability of Frederic's tactics was demonstrated by Frederic himself, who out-manœuvred and defeated it with crushing effect. At Leuthen, however, which was his masterpiece, the attack in oblique order was carried out more in conformity with true principles. Frederic took advantage of a chain of eminences extending from Borne to Sagaschutz, under cover of which he moved his army swiftly and surprised the Austrian left flank, which he forthwith attacked and drove in confusion on to its centre. The Austrian right was powerless to save the day in spite of Lucchesi's brilliant charge. The stream in front of this part of the position offered an obstacle alike to any offensive movement against the Prussian left or to a change of front. It was the identical faultiness in the choice of a position which we have observed at Ramillies. The victory was a great feat and as such seemed a complete vindication of the oblique order of battle. An army "wholly inferior in force and partly composed of beaten troops," as Napoleon has pointed out, defeated and routed an army nearly three-fold in numbers and with such insignificant loss. Nothing succeeds like success. Certainly, Leuthen judged by results should disarm criticism. Pedants have raved over the attack in oblique order and have sought to find in it a talisman that assured success irrespective of the character of the enemy and regardless of topographical peculiarities of ground. Soubise, actuated by a burning desire to emulate the deeds of the greatest tactician of his age, and ignorant alike of tactical principles in general and those governing Frederic's manœuvre in particular, sought to give it expression in the field and was destroyed. A half century later Kutusov and Buxhowden beguiled into a repetition of it by Weyrother shared a similar fate at Austerlitz.

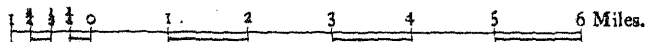
The plans of the four battles I have presented to the reader will, I think, have fully illustrated the oblique order of battle with all its salient merits and demerits. It is necessary, before proceeding further, to determine the link representing Frederic's system of tactics in the continuous chain of tactical evolution. We must not form an extravagant opinion on the merits of Frederic's system based merely on its successes, without weighing the fatuitous tactics by which it was opposed ;



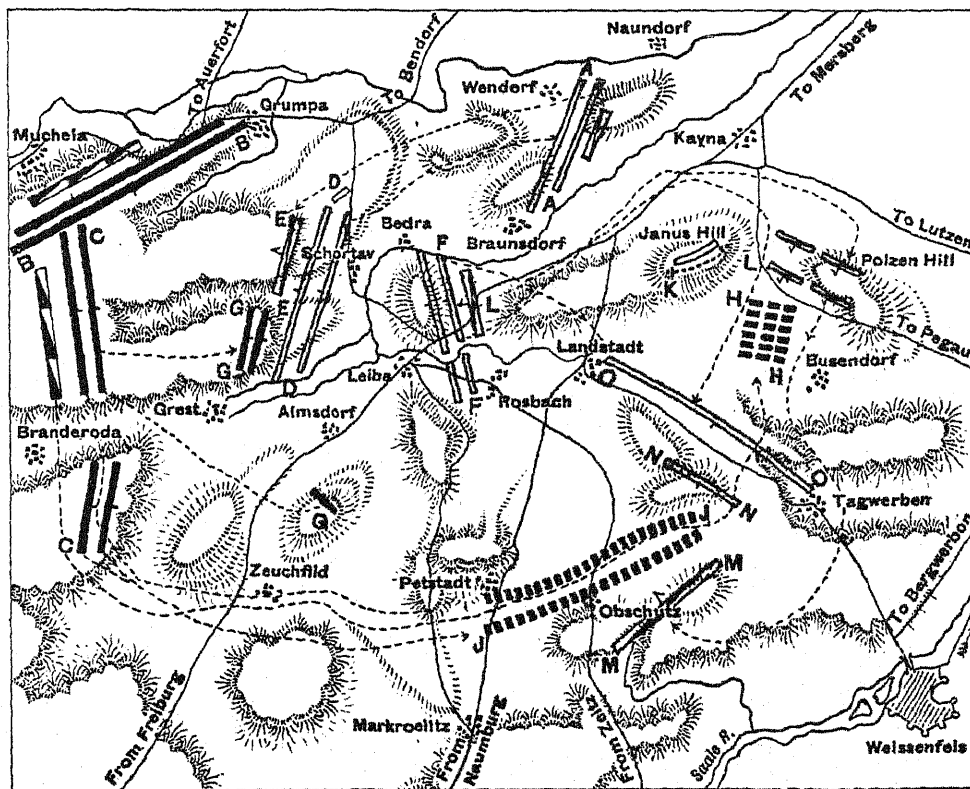
THE BATTLE OF ROSSBACH.

5th November, 1757.

SCALE OF MILES.



R.F. $\frac{1}{129,000}$

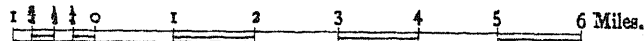


- A. Prussian Army under Frederic, 23,000 (4,000 Cavalry)—1st position, after crossing the Saale.
- B. French and German Army, 55,000, under Soubise—1st position, after retreating from the Saale.
- C. 2nd position taken up by Soubise.
- D. Frederic moves to attack, but finds position of enemy too strong, and takes up a 2nd position F F between Bedra and Rosbach.
- G. Detached force under St. Germain to observe the Prussians. Soubise makes flank march in full view of enemy.
- H. His advanced guard of Cavalry.

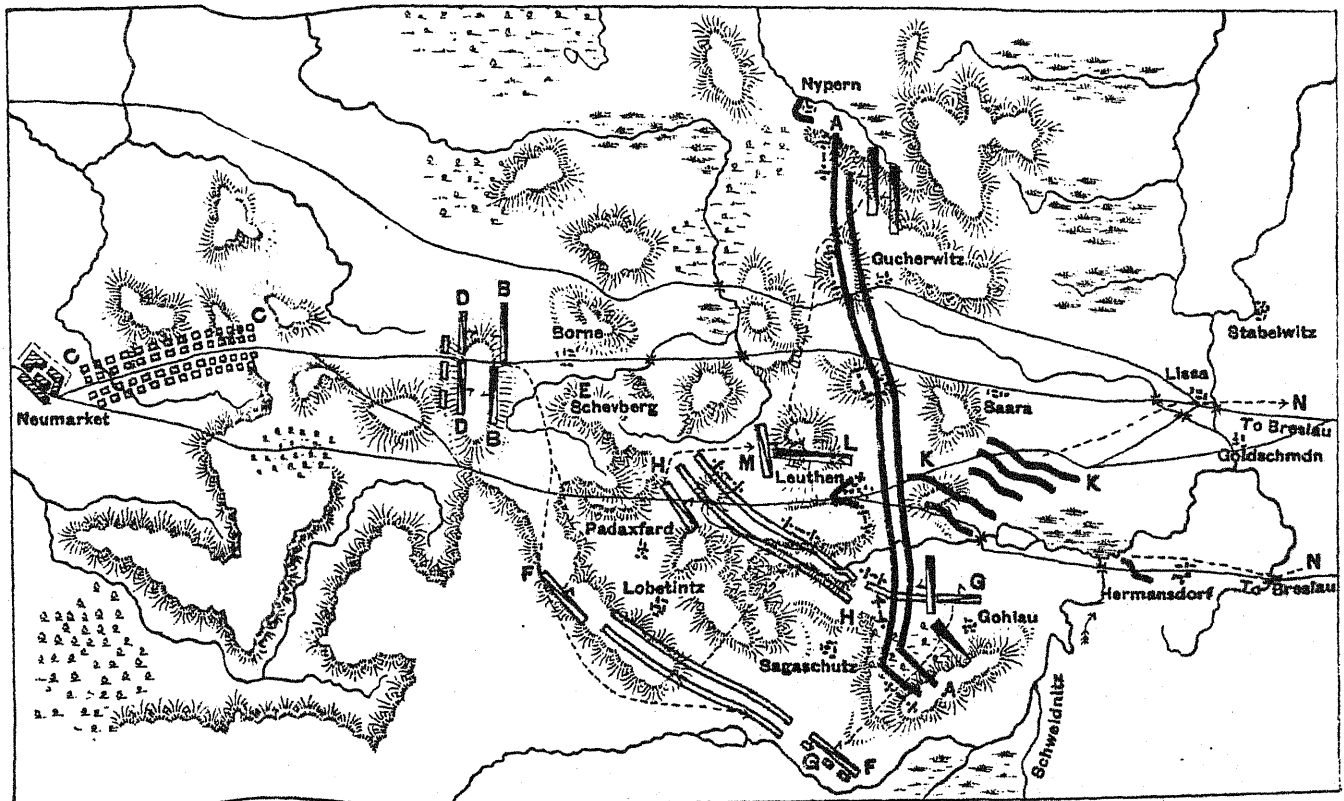
THE BATTLE OF LEUTHEN.

5th December, 1757.

SCALE OF MILES.



R.F. $\frac{1}{129,000}$



- A. Austrian Army, 80,000, under Prince Charles with 210 guns—1st position.
 - B. Austrian advanced post, three regiments of Saxon Cavalry under Nostitz.
 - C. Prussian Army, 30,000 men, on the march.
 - D. Prussian advanced guard under the King destroys or captures nearly the whole of Nostitz force, remainder fled in direction of Nyporn and led Austrians to expect an attack there.
 - E. The Scheuberg whence Frederic reconnoitred enemy's position.
 - F. Prussian Army in two lines, marches under cover of low hills to attack Austrian left flank, wheels to the left and attacks.
 - G. The advanced guard under Zeithen throws back Nadasti's left beyond the woods of Sagaschutz.
 - H. Prussian main body advancing in echelon to support Zeithen and attack Leuthen.
 - K. Austrian left flank thrown back on its centre in confusion.
 - L. Count Lutchesi commanding on right, tries to retrieve the day by charging Prussian battalions assaulting Leuthen.
 - M. Dreisen makes counter charge taking Austrian Cavalry in flank.
 - N. Line of Austrian retreat.
- Austrian losses 10,000 killed and wounded, 21,000 prisoners, 116 guns. Prussian losses 6,250 killed and wounded.

we must submit it to a critical examination side by side with the highest antecedent form of tactical development which the battles of Türkheim and Ramillies disclosed. The Prussian King's invariable aim was, by seizing the initiative, to place his *entire* army obliquely on one or other flank of the enemy's position. Yet surely, by doing so, he was fulfilling the conditions of a cardinal maxim of war, which requires the concentration of a superior force against a vulnerable and decisive point in order to command success? Yes; that is so. But his tactical method of applying the principle was faulty in the extreme. By a too literal interpretation of this axiom he was violating another which postulates the careful guarding of one's own lines of communications whilst attempting to cut or to even threaten those of one's enemy. Further the attack in oblique order, *per se*, exposed itself to the danger of three primary tactical counter-movements. Firstly, by a mere change of front which would result in converting the oblique into a frontal attack. Secondly, by a change of position in the threatened direction, or a prolongation of the line on that flank so as to take the oblique attack itself obliquely. And, thirdly, by a combination of the first two moves and the simultaneous hurling of the bulk of the forces against the rear of the army executing the oblique attack. Now it appears to me clear that Turenne's dispositions at Türkheim (see plan in previous paper) were not only devised in conformity with true principles, but they were fundamentally superior to those which Frederic habitually employed in all his battles particularly at Leuthen which is admittedly his finest performance. Even the most superficial comparative study of Türkheim and Leuthen leads one to the inevitable conclusion that the latter, though a great victory, was a tactical anachronism. And if this is so, comparison of Frederic's art with the grand combinations of the victor of Ramillies tends only to cause it to appear on a still lower plane. In fact its true place in the chain of tactical evolution must be sought even beyond the day when Nero's brilliant manœuvre enabled Rome to emblazon "Metaurus" on her imperishable roll of famous victories. In a word, if I may borrow a biological term, it was a form of tactical atavism.

But, on the other hand, the persistency with which Frederic manœuvred to strike at the flank and even the rear of a passive enemy, as in the case of the Russians at Zorndorf, and the astonishing success which sometimes attended the movement, although unsupported by a frontal attack to hold the

enemy to his ground, arrested attention, invited study, and tended to dissipate from the minds of military men any misgivings as to the risks involved in such undertakings. It had the effect also of crystallising what had rarely been attempted in former times into a recognized principle of tactics. So much so, that since the Seven Years War flank attacks had become the rule and not the exception. Already during that war, at the battle of Hochkirch we observe the glimmerings of an approaching revolution in the tactical art. So unusually good were the Austrian dispositions at that battle, and so unlike the normal methods of Prince Charles or Daun, that one feels convinced the general plan emanated from Loudon, the most able general produced by Austria during the war, who began his career as a bold and skilful leader of irregular light horsemen, and who only attained the supreme command, too late in the last months of the war. But the excellent conception and execution of the plan which combined a frontal with a flank attack developed under cover of darkness, was marred by timidity in pushing it to a finish, and it was never again repeated. The period of repose intervening between the close of the Seven Years War and the outbreak of the French Revolution, as often happened after a great conflict, was marked by speculations of all kinds as to the theory and practice of the art of war. The oblique order of battle was still considered the best possible by one school of thought, whilst by the opposite school it was scouted, and means were devised to defeat it. It was proposed to encounter the rigid lines of Frederic's system by means of attacks in column which were more mobile, flexible, and easily handled especially over difficult or intricate ground than the former. The columns themselves were to be covered with a cloud of skirmishers under cover of which they would approach their respective objectives, and then either charge in mass or deploy to fire as circumstances required. The potentialities of this theory were great. In effect the controversy amounted to a difference of opinion between the school of Marlborough and that of Frederic which could only be decided by the stern arbitrament of war. And so all was theory unconfirmed by actual experience, and although the Prussians who attacked in oblique order at Valmy were defeated by the French artillery, and the old passive Austrian lines succumbed to the French columns at Jemappes, there was still much doubt and uncertainty as to the lines upon which tactical formations would develop further, until at length the volcanic

outburst of the Revolution heralded not only the hour but the man who was to show the way.

The international Napoleonic literature has grown so extensively as to constitute quite a respectable sized library in itself. Since the comparatively recent publication of his *Correspondence* there has been a marked revival of the Napoleon cult. There appears to be no signs of its diminution or abatement : on the contrary as time goes on it is likely to increase. What enthralled is the fascinating and powerful personality which is the central figure in the Titanic struggle that for nineteen years convulsed the civilized world barely a century ago. Each fresh perusal of this remarkable career results in the detection of some profound lesson overlooked before. One realizes what a wealth of material there is here only awaiting the wizard touch of another Homer to give it renewed life and expression in the form of a great epic. A spirited nation groaning under the intolerable yoke of an arrogant and unscrupulous oligarchy emancipated itself and clutched at democracy only to presently awaken to the realization of the fact that it had seized upon autocracy. We have the spectacle of a people that had forcibly overturned the monarchical and aristocratic traditions of centuries in order to secure complete liberty of thought and action, presently engaged in endeavouring to enslave an entire continent to the will of one man. The restless energy and boundless ambition and imagination of this man carried the nation along with him. His aim was nothing short of a bid for the conquest of the world. The impulse to follow enthusiastically whithersoever his eagles led was irresistible. The glamour of the East, its air of romance and the historic memories that clung around the mere wreckage of ancient civilizations and powerful empires that had passed away for ever, offered subtle allurements to his imagination. Before he conquered Europe he had planned the annexation of Asia. "My glory," said he on the eve of his departure for Egypt, "is already at an end. There is not enough of it in this little Europe. I must go to the East. All great glory comes from there." And even some time before, when but recently returned from his amazing triumphs over Beaulieu, Colli, Wurmser and Alvintzy, he remarked discontentedly "Europe is a mole-heap. Only in the East have there been great empires and great cataclysms." Alexander was his lodestar. He was burning to emulate and to excel his exploits. Posterity would be compelled to acknowledge and acclaim the fact. But Alexander had conquered Asia from the shores of

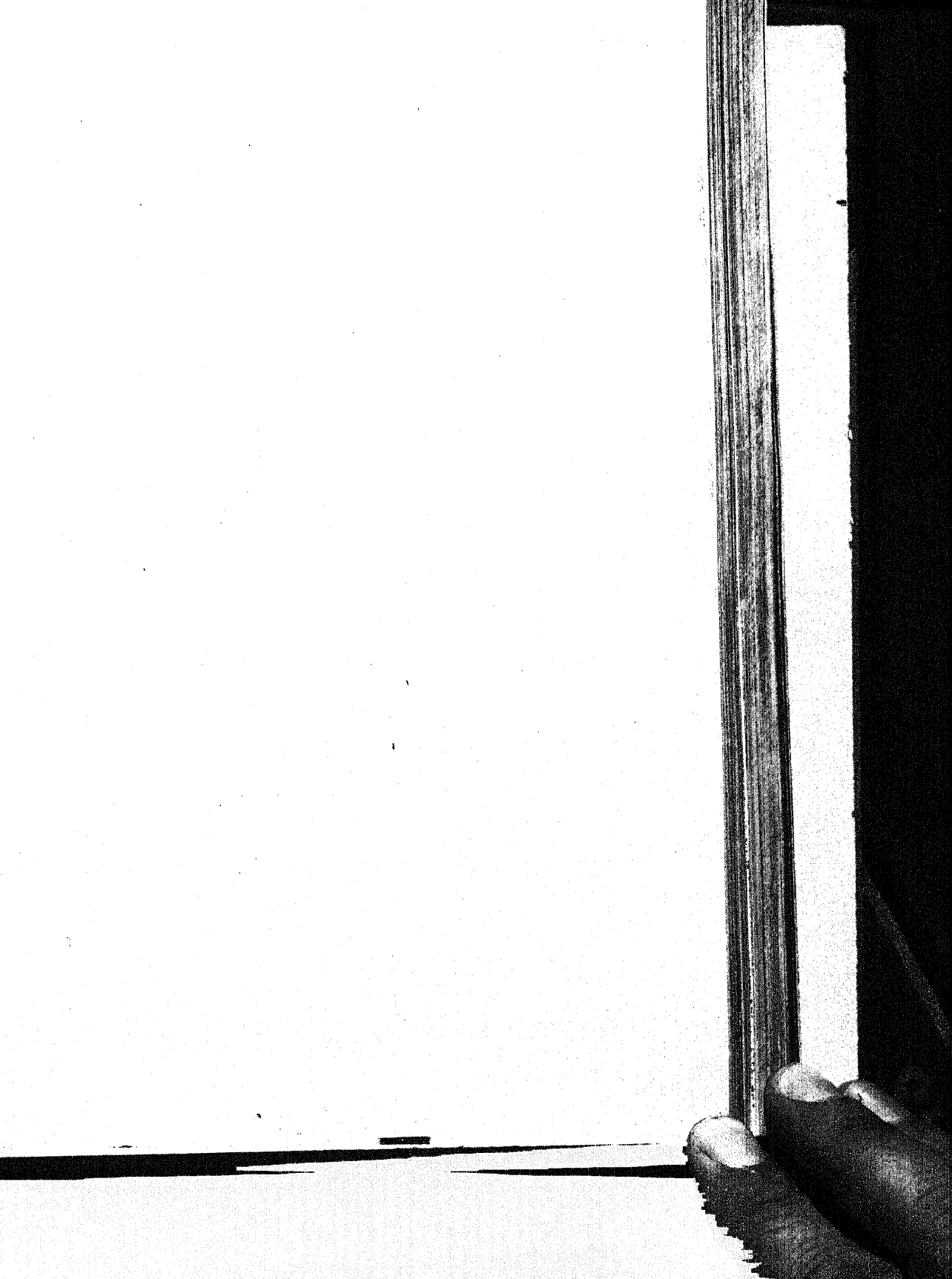
the Hellespont to the banks of the Sutlej. The mutinous refusal of his officers to proceed further prevented his extending those conquests to the Bay of Bengal. At Babylon, on his return from India, he was already maturing plans for the invasion of Africa and Europe to the Pillars of Hercules, when he was prematurely cut off at the early age of thirty-four. The cravings of ambition and earth-hunger then in this young man of nine and twenty must indeed have been stupendous to have buoyed him up in the hope and assurance of excelling achievements and plans of such magnitude. In order to do so he must have authority and power. He had the iron will, the confidence and the intellect, but power he must have. That he was fully assured of the certainty of having this power thrust on him can be judged from his enigmatical saying to Murat on the night before the battle of Aboukir, "This battle will decide the fate of the world." And who shall say what this fate might have been had Napoleon checked his too rapid advance in a depleted country and called a halt at Smolensk in the autumn of 1812. Had he given the Poles the autonomy they eagerly expected as a reward for their services, and had he consigned to them the entire country between the Oder, the Dwina and the Dneiper under his own sovereignty, what an excellent and assured base it would have afforded for a fresh advance in season and the destruction of an elusive enemy piecemeal. Instead of which he allowed his imperious pride to override his better judgment, thereby wrecking not only his vast projects but dooming to destruction a magnificent army that never could be replaced.

His "Supper of Beaucaire," his famous memorandum on Toulon, his equally remarkable one on the situation of the Army of Italy, the Eguillette incident, and his peculiar relations with Barras, all combined to bring the young Bonaparte into prominence, helping to raise him with a bound from the command of a regiment of artillery to that of an army of 45,000 men. But he could not have long maintained the position had he been deficient in professional knowledge. He had, after leaving the Military Academy in Paris, spent the first few years of his service in a close study of the higher branches of his profession, also abstract sciences and history. He had also paid particular attention to military maps, so that he could read them with marvellous facility and accuracy and was able to grasp the topographical features in a given area of operations at a glance. In all his cam-

paigns he himself first worked out with map and compass in hand the general movements of his army, leaving Berthier, who was his chief of the staff from 1796 to 1814, to work out details. When we first hear of the young Captain Bonaparte at the siege of Toulon he had not seen a shot fired on active service, and yet he very soon made his influence felt in the midst of officers of the highest rank, thanks to his mental equipment and preparation by study which had given him a wide grasp of the principles of the science of war. That he was a genius in the sense of his having a special taste, or disposition qualifying him for the profession to which he belonged, is unquestionable. At the same time there is a mechanical side of the profession without which, and the knowledge of the principles of military science, he could not have accomplished what he did. Those who are disposed to scoff at the value of a serious study of the military profession would do well to ponder these facts. What gave Napoleon such astonishing confidence in himself was nothing more than the consciousness of possessing superior knowledge which led him to describe Mack as the most mediocre general he had met and the Archduke Charles of Austria as a blockhead. To my mind it was Napoleon's mastery of the mechanical and higher branches of his profession at an unusually early age and his perfect *genius for applying correct principles in the field* which gives us the true key to his successes. No general ever thought out all the various aspects of a plan of campaign more thoroughly than he did. When it came to action, he did not trouble about secondary matters or try to see too many things at once, but kept his eye on the decisive point and bent all his energies towards its attainment. No one eliminated or guarded against the possibilities of chance more than he did. He even went the length of sending Marmont an account of the battle of Breitenfeld with an earnest request that he should study it in connection with the ground which his corps was then occupying in momentary expectation of a battle; and in the spring of 1812 he directed Barbier, his librarian at Paris, to forward to him in Germany all the best works dealing with the history and physical geography of Russia, and such as treated most minutely of the campaigns of Charles XII. in Poland and Russia, all of which he presumably studied.

O'Connor Morris in his "Great Commanders" referring to Napoleon says, and I think very truly too, that

"his generalship in 1814 considered as a whole was not equal to that of 1796, and his campaigns of 1812, of 1813 and even of 1814 remind me of Turner's latest pictures; we see the hand of the master everywhere, but there is a want of proportion and real harmony, and the result is sad and general failure". Without doubt Napoleon's first campaign of 1796, both from a strategical and from a tactical point of view, was his masterpiece. In all his subsequent campaigns he commanded larger armies; he manœuvred strategically over much vaster areas; he fought against greater odds; but in none did his genius shine with such splendour as in his first Italian campaign. It startled and amazed the civilized world, leaving an after effect that seemed ever to paralyse the mental faculties of the generals who successively opposed him, so much so, that his calculating brain when present in the field was held to be the equivalent of 40,000 men. His energy, his vigour, his decision, the celerity of his movements, the rapidity with which he changed his plans to suit the fleeting exigencies of the moment are never seen to better advantage than they are in that campaign. It bears the unmistakeable hall mark of his genius. He often repeated his exploits of this year but never surpassed them. Are we struck by his strategical conception of 1815? Study his movements directed against Colli and Beaulieu on the Ligurian Alps. How similar the situations but how brilliantly solved at Dego and Mondovi. Identically the same problem—how to defeat two armies based on divergent lines, each itself inferior but both combined greatly superior to his own army—is offered for solution at the beginning and end of his career and how different the results! Are we filled with admiration for his operations on interior lines in 1814? Compare it with his movements against Wurmser and Quasdanovitch on the Mincio in 1796 where the principles involved were more accurately and successfully applied on the fields of Lonato and Castiglioni. Are we impressed with the strategical skill which placed the French Army astride Mela's lines of communication before the battle of Marengo, or Mack's at Ulm? It was initiated at Bassano where Wurmser had to face a similar situation. If we apply the analytical process of investigation to Napoleon's military exploits and so discover the general principles underlying his remarkable success, we shall find that in his first Italian campaign he conformed to true principles

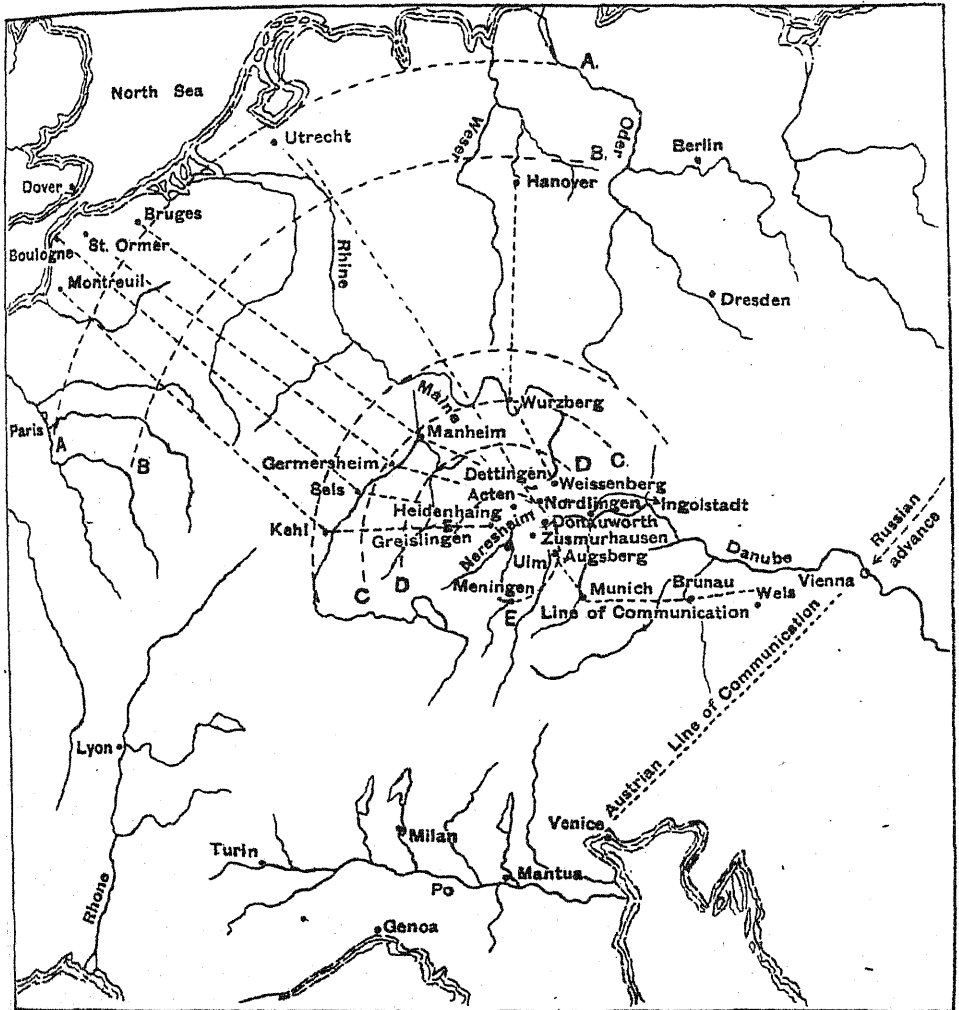
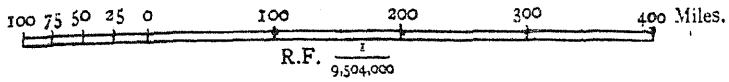


THE BATTLE OF ULM

8th—20th October, 1805.

STRATEGICAL MAP.

SCALE OF MILES.



In autumn of 1805 Austria and Russia take combined action against France. Archduke Charles is to invade Italy with 95,000 Austrians, Mack is to invade Bavaria with 60,000 Austrians. 55,000 Russians are to be at Brunau in support by 20th October. Napoleon decides on leaving Massina with 50,000 in Italy to hold main Austrian Army, and himself attacking Mack with bulk of his Army. Mack's Army at Ulm is strategic objective. By defeating him the Archduke Charles' position in Italy rendered untenable. Napoleon decides on striking Mack's line of communication to cut him off from Russians and from his base.

In August the Grand Army is camped along the area marked by the arc A A. The Cavalry divisions north of the concentric arc B B. The Army is set in movement on 31st August, so timed by Napoleon that the various corps cross the Rhine and Maine concentrically as shown by the arc C C on 26th September. On that day Murat's Cavalry Corps is on the concentric arc D D.

On 7th October the corps are on the line Greislingen—Weissenberg with Murat's Cavalry from Greislingen to Donauworth. Mack being still at Ulm, Napoleon swings whole Army round on arc E E. Ney remains at Neresheim to cover movement. Bernadotte and Davoust *viâ* Ingolstadt to Munich: remainder cross at Donauworth. On 10th October the Emperor is at Augsburg with Murat, Marmont, Bessières and Soult. On 12th Bernadotte is at Munich. Murat and Lannes defeat Austrian detachment at Zusmarshausen on 8th. At this point the strategical phase ends, the two Armies being in touch and the strategical objective gained.

Composition of Grand Army.

In Command—THE EMPEROR.

Chief of Staff—BERTHIER.

	<i>Inf. Div.</i>	<i>Cav. Div.</i>	<i>Strength.</i>	<i>Point of Starting.</i>
Guard Corps. Bessières,			6,000	Boulogne.
I. Corps. Bernadotte.	Drouot.			
	Rivaud.	Kellerman.	18,000	Hanover.
II. Corps. Marmont.	Boudet.			
	Grouchy.			
	Dumonceau.	Lacoste.	21,000	Utrecht.
III. Corps. Davoust.	Bisson.			
	Friant.			
	Gudin.	Vialannes.	27,000	Bruges.
IV. Corps. Soult.	St. Hilaire.			
	Vandamme.			
	Legrand.			
	Suchet.	Margaron.	41,000	St. Omer.
V. Corps. Lannes.	Oudinot.			
	Gazan.	Treillard.	18,000	Montreuil.
VI. Corps. Ney.	Dupont.			
	Loison.			
	Malher.	Tilly.	24,000	Boulogne.
Cav. Corps. Murat.	...	Nausonty.		
		d'Hautpoul.		
		Klein.		
		Walther.		
		Beaumont.		
		Bourcier.		
		Baraguy d'Hilliers.	22,000	Arc B B.

Bavarian Corps 22,000 men joined Bernadotte on 2nd October.

with more undeviating accuracy than in any subsequent one. He never allowed himself to commit those errors of judgment or those lapses from recognized rules which marred the decisiveness of some of his later performances. He based his strategy on that of Nero and Turenne and his tactics on that of Marlborough, rejecting Frederic's. His pursuit of a defeated enemy, witness that of Beaulieu, Wurmser, Alvintzy and the Archduke Charles, was as relentless as Alexander's. His method was distinctly scientific and the principles that are to be found compressed in this campaign stand out so clearly that we may well imagine Napoleon himself expounding them to us in that didactic manner so characteristic of him. When you fight, do so with a view to annihilate not merely to defeat your enemy. Assume the offensive and keep the initiative. If you are forced on the defensive do not await attack passively, but move rapidly compelling the enemy to conform. If you assume the offensive strike at the enemy's communications: first get astride of them, then fight. Guard your own lines of communications. Do not move in one mass, but in several masses, provided they are in touch and mutually supporting, it is the only way to confuse the enemy and to keep him in uncertainty. Place the bulk of your masses on the enemy's "strategical wing," hold or play him elsewhere. Be sure you are superior in strength at the decisive point though you may be inferior in strength on the whole. Always throw the superiority of strength against the weakest point.

The principle of the employment of *masses* gives us the key to the Napoleonic system. Its establishment constitutes a fundamental change in tactics and inaugurates a new era in warfare. It is the next step in the evolutionary development of the art, the highest form of which we have seen established by Turenne and Marlborough. We should particularly bear in mind that it is altogether independent of the very rapid improvement in firearms and cannon which has taken place since Napoleon's day and that these inventions of the nineteenth century up to date have in no way modified or altered the fundamental principles established by him. His system is still unsurpassed as a model of tactical skill. Hitherto, as I have endeavoured to show in a survey of tactical formations from Thymbra to Leuthen, the practice, generally speaking, had been to deploy an army for battle *in one mass*. I have also explained and illustrated the

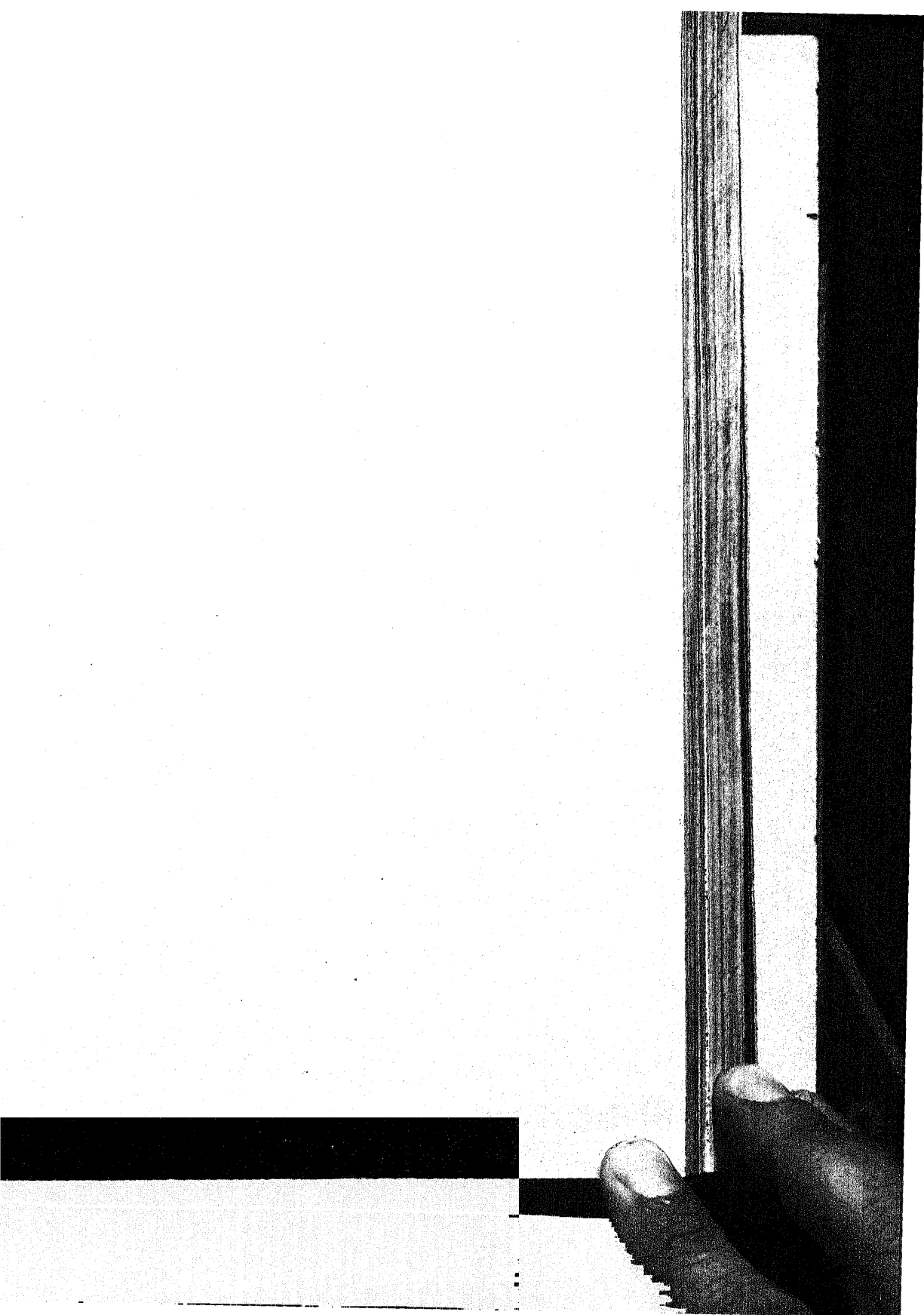
internal tactical modifications which armies have undergone during the period intervening between those two battles. These modifications, tending ever towards greater mobility, have, as we have seen, commanded success, the most unqualified success at various periods of history. But the salient fact stands out that throughout all those centuries it was the invariable practice to deploy an army in one concorporate mass for battle. It is of secondary importance what particular formation an army adopted when it had deployed. We have seen the Egyptians massed in units of 100 ranks and 120 files; we have seen the Greek phalanx formed in 1,024 files and 16 ranks; we have seen the Roman Legion in its lines of maniple and cohort units; and we have seen the Swedish regiments and demi-brigades. All these armies were composed of certain homogeneous units which were fused together in one mass. That mass represented force which could be exerted, generally speaking, from one direction only and that a known one. It suffered from a too great concreteness. However many masses an army may have formed in the strategical stage of operations for convenience of supply and facility of movement made no difference in the end, for it was eventually concentrated into one mass in the tactical field. I conceive Napoleon's great discovery to have consisted in his having demonstrated how the movements of masses in the strategical stage could be gradually merged into the tactical phase and so continued right up to the point of contact with his objective and in doing so to have proved the enormous effect of the simultaneous application of force unexpectedly and in unknown strength from more than one direction. It is only by the wide study of military history and the investigation of antecedent campaigns conducted by great soldiers that we can hope to ascertain how he acquired the secret of his art. That the knowledge of it was innate in him is an assertion that will not find ready acceptance in this age of scientific criticism and investigation of the true relations existing between cause and effect. It seems to me little open to doubt that Napoleon obtained the clue to the secret of his grand tactics from Marlborough whose methods suggested to him a still further development. By bringing those principles into operation at a greater distance from the enemy the effect of the combined movements was much more telling.

These new principles were first put in practice by Napoleon in 1796, offensively against Beaulieu and Colli and defen-

sively against Wurmser and Alvintzy. In both cases the masses were divisions: later on in his brilliant campaign of 1805 culminating at the battle of Ulm the masses employed are army corps: later still in 1812 those masses have grown to the dimensions of armies for the so-called corps of Davoust consisted of 72,000 men. The size of these masses is quite immaterial and not worth considering, but it will be found that the principle of their employment, both strategically and tactically, hardly varies. I attach a strategical and tactical map of the Ulm campaign which I think will serve best to fully illustrate Napoleon's system. The first demonstration of his tactics is presented in all its vigour, accuracy and effectiveness at the battle of Mondovi where Colli was held in front by a portion of Massena's division, his left threatened by Angereau and his right completely turned by an excellently timed movement of Serurier's division. Again at Castiglione he held Wurmser with Angereau's and Massena's divisions until the arrival of Serurier's division on the enemy's left flank when he pressed the attack from two directions. In these battles we perceive the inauguration of the concentric order of battle. On both these occasions Napoleon manœuvred five or six masses with ease and precision. In the Ulm campaign he had to regulate the movements of nine distinct masses and in Russia in 1812 he directed no less than thirteen of them. The size or strength of these masses were not the same in all his campaigns by any means, and they varied also very much in relative strength, but in one respect, and that a most important one, they were homogeneous, that is in the proportion of the three arms allotted to each command whether division or army corps, so that each was self-supporting and able to act independently if required. One of these masses Napoleon invariably retained at his own disposal and under his immediate personal command. It consisted of the Imperial Guards (Old and Young) with the guards cavalry and artillery. *He established the principle of a reserve of all arms.* Since these masses were liable to be widely separated in the tactical and particularly the strategical stage of operations due provision for their interconnection and co-operation was of the utmost importance. Not only must each be secured from surprise and isolation, but the general direction of their movements and the distribution of strength along the whole front must be carefully concealed from the enemy. It became necessary that the cavalry attached to the respective masses should afford local protection and also maintain

connection, and that the bulk of the cavalry organized with the mobile artillery as a distinct corps should be utilized to form a protective screen well in advance of the collective masses with the additional duty of gaining information and early intelligence of the enemy's movements and dispositions and transmitting it without delay to the General in Chief. *Napoleon first laid down this principle of the employment of divisional cavalry, of cavalry divisions with army corps, and of an independent cavalry corps with an army in the field*, the two latter bodies being stiffened with horse artillery. He was the first to make the fullest use of this new mobile artillery with cavalry masses. In regulating the movements of these several masses in the field the most careful, precise and rapid calculation as to time and space was necessary in order to avoid confusion and ensure success. It is in the domain of logistics that Napoleon's genius showed itself most conspicuously. His calculations were based on such essential and all-important factors as intelligence, deception, celerity, surprise, co-operation and concentration. In Marlborough's combinations at Ramillies we observe the germs of the art of grand tactics. Napoleon developed that art to so great a degree, by giving to it a strategico-tactical aspect, that it remains unsurpassed to the present day. Such changes in tactical formations as have taken place since then are not fundamental ones, but merely the internal modifications in masses of troops in the tactical field necessitated by the invention of long range rapid firing and accurate weapons. By a unique application of logistics to the tactical art then existing he completely revolutionized it. When we remember that but half a century earlier Frederic with 4,500 cavalry and Neippberg with double that number of horsemen at Mollwitz were oblivious each of the other's proximity though separated by only seven miles of country, we realize the immensely higher sphere of usefulness to which the cavalry arm was raised by Napoleon. We also recognise that he greatly advanced it if he did not create staff duties in the field. He assuredly increased the responsibilities of subordinate generals by his system of decentralized command, *raising the conception of ideal generalship from the plane of mere leadership to the higher one of directorship*. These I conceive to be the most striking contributions to military science made by this great expounder of the art of war.

(To be continued.)



THE TWO SIEGES OF BHURTPUR.

BY MAJOR G. F. MACMUNN, D.S.O., R.F.A.

Since Lord Wellington with scant patience sat him down to besiege those fortresses in Spain that were vital to his advance, the British Army has not been largely concerned with sieges. Defences of a kind have been numerous, sieges number but two in the last half century.

The weary dreary fiasco of Sebastopol, the bitter humiliations before our allies, the recriminations, jealousies and controversies that followed it, though brightened by the endurance of the rank and file, and the peace wrung from Russia, is not bright reading. The other great siege of the Victorian era, the grim clinging of the masters to the Ridge before the rose red walls of Imperial Delhi, with all the romance that clings to the long delayed assault, the halo that surrounds of the memory of John Nicholson's rise and death, all fill a most fascinating page of history. These two sieges occurred within three years of each other, and in 1848 took place the only other important leaguer of Her Majesty's reign, that of Mooltan in the last struggle of the Khalsa against fate.

There is a medal inscribed "To the Army of India", so old that the youngest recipient must have long gone to his rest, given for the campaigns of Lake and Arthur Wellesley, of Malcolm and Hislop and David Ouchterlony, that bears last among its twenty-four clasps that for "Bhurtpur," and yet what of it? Who knows or cares of Bhurtpur and what befell there, of the dogged failure of Lord Lake, at the end of a career of daring triumphs, of the three thousand soldiers who fell before its walls to no avail, of all India watching the British for twenty years and more, in jeering wonder, and then the writing on the wall, and the capture after a prolonged siege and storm in 1826. The British corps that took part may treasure the memory—the native regiments that did so well, vanished in the debacle of 1857, and no one else remains to care, though as many troops took part in the final capture as landed in the Crimea.

Bhurtpur is a large and intensely strongly fortified city, a few marches from Agra, the centre of the incomprehensible and war-like race of Jats, to which some say the Gypsies of

England belong. It was besieged and four times unsuccessfully assaulted by Lord Lake in 1804, from which date till Lord Combermere stormed the fortress in 1826, its rulers had scoffed at British supremacy, and harboured every wolf-head and every masterless man in the country side.

Now the sieges of Bhurtpur came about in this wise. At the commencement of the last century the position of the British in India was a very different thing to what it is now. The Mahratta Confederacy, Sindia and Holkar, the Peishwa and the Bhonsla, were a power in the land almost as great as our own, and bitterly hostile with prophetic wisdom. We had been at war with France for years and the peace of Amiens was looked on as a temporary respite at best. We had, it is true, hurled after years of strife the French as a power from India, but their sting dug deep, and French officers and many adventurers of the lesser European breeds were hard at work organising on their own models the troops of the Mahratta chiefs and their lesser satellites. Napoleon Buonaparte openly and in all seriousness was planning an invasion of India *via* Syria, with the willing help of the Tzar, and with him was closeted daily one De Boigne the famous Savoyard general who had just quitted the service of Sindia for whom he had raised and trained fifty thousand men, horse, foot and artillery over whom M. Perron now reigned in his stead. The whole of the Doab, the territory between the Jumna and the Ganges, had been assigned to Perron by Sindia for the upkeep of this huge French trained force, and the wretched Shah Alum, the puppet of Delhi and titular Great Moghul and Emperor of India, was in Perron's hands. The Mahratta Confederacy were eagerly planning to try conclusions with the *Angrez* and drive them into the sea, and all India stood agog to see it.

Luckily for England there were some in those days who understood that the moment to make war is that most suited to one self, and not that most favorable for one's adversary. At that time Richard Colley Wellesley, Lord Mornington, and later the Marquis Wellesley, was Governor-General and a strong man to boot, and his two brothers were his right hand men. It had soon been borne in on him that the Mahrattas and the British could not both own sway in the land. Two wives in one house and two masterful races in one country-side have always failed, since the earliest days of man. So before the Mahratta plans were ready or the promised French

assistance arrived from oversea, the Governor General had decided to deal the Mahrattas a staggering blow, to secure the person of the great Moghul, and crush the French influence once and for all, and to make all the lesser states accept his subsidiary system of alliances.

In 1803 General Arthur Wellesley and Colonel Stevenson swung up over the Ghauts to cut the Mahrattas from the sea, and fall on Sindia and the Bhonsla, and General Gerald Lake marched out of Cawnpore with close on eleven thousand men, to capture Agra and all the "French States" as M. Perron's military province in the Doab was called. A smaller force moved into Bundelcund from Allahabad. Of Wellesley's crowning victories of Assaye and Argaum, hardest of hard-fought battles, of Lake's daring march on Delhi, his *coup-de-main* at Aligurh, his defeat of Sindia's army at Delhi under M. Louis Bourquin, of his interview with the blind and tearful emperor, it is not possible to speak at length here, nor of the final destruction of the last of De Boigne's fine army at Laswaree. They are a splendid record of daring and energy, of *L'audace et toujours l'audace*, of which Lake,—Lucky Lake men called him for all the hazards he took and won—was the great exponent. Following on these victories and the fall of fortress Gwalior, came the excesses of Jeswunt Rao Holkar, the Chief of Indore, and Colonel Monson's ill-conceived advance across the Chumbal and all the pity and humiliation of his retreat before Holkar, with losses of guns and almost all his force, which in the fickle East almost undid all the good of Lake's previous victories.

Lake, however, soon came to the rescue, and Holkar disappeared before him to reappear suddenly at Delhi, held tenaciously by a small sepoy garrison under Burns and David Ouchterlony, against furious onslaughts till Lake arrived hot haste to the rescue. Then commenced Lake's famous cavalry pursuit of Holkar, who had now been reinforced by Sindia and Bhurtpur, as far as the banks of the Betwa, and whom he finally overtook and trounced at Furruckabad. This march, as great an achievement of cavalry as any in history, totalled 350 miles between October 31st and November 17th, 1804, and the last stage was seventy miles in twenty-four hours.

The year before, the Rajah of Bhurtpur had made a treaty of Alliance with the British, but after Monson's debacle, he thought like many another that he knew which way

the cat was going to jump, and had joined the elated Holkar. While General Lake and his dragoons, His Majesty's 8th, 27th and 29th and several native cavalry corps, had been chasing Holkar's hordes of Horse, General Fraser had destroyed his infantry under the walls of the Bhurtpur fortress of Deig.

A few days later Lake himself appeared before the fortress with a light siege train drawn hastily from Agra, and opening fire on the 14th of November stormed the place with his usual elan on the 22nd.

From thence he moved to settle accounts with the faithless Bhurtpur. The "Army of India" medal has clasps both for the "Battle of Deig" and the "Capture of Deig".

After the continuous marching and countermarching of the last twelve months Lake was anxious to give his troops some rest, and turned on Bhurtpur in the hope that his luck would hold good, and that its capture would finish the campaign. The past year had been full of incident, stirring and dramatic in the extreme, notably the rescue of the blind Shah Alum from the hands of the French Mahratta fraternity. We in these days do not realize how hard the French influence died in Hindustan. In the State of Hyderabad the adventurer soldier thrives in a mean fashion to this day, and the descendants of the French soldiers of fortune are still to be found there, while in the Panjab their tracks are still recent. In the Imperial Service Forces of Kashmir there are Dogra officers still serving who can drill a battalion in French, close on 150 years after the downfall of the French power in India.

Among the many incidents of Lake's campaign an amusing one comes down to us, and that is, how, when the General was holding high Durbar in the Imperial city the day after his entry, the famous Begum Samru or Sombre of Sardhana, came with her motley escort to pay her respects to success, and to the countrymen of her lover, George Thomas, her brute husband the drunken French sailor. Sombre having been dead some years. General Lake had lunched and lunched well, after the fashion of those days, and as the Begum entered the Durbar tent, he sprung down from his dais and kissed her soundly on both cheeks, whereat an uproar arose and some of her followers drew their swords. The Begum however airily remarked that he was her cousin and that such was the English custom, by which time the general had handed her to a seat beside him.

Returning to the General on his march to Bhurtpur, it is interesting to try and picture an Indian Army on the march a century ago. At the head marched the cavalry, three regiments of jolly English dragoons, in the heavy leather crested helmet, a protection equally against sword and sun, and as many more of irregular horse, for the native dragoon in a travesty of Georgian uniform had not then been evolved. Wide on the flanks marched the newly raised horse artillery, the outcome of the earlier galloper guns, the gunners in the same dragoon helmets, which this arm continued to wear in India till the days of the Mutiny, the light pieces leaping and bounding to every tussock of coarse kai grass.

At the head of the infantry columns rode the General and his staff, a pad elephant for the convenience of reconnaissance lurching behind. General Lake wearing an immense cheese cutter cooked hat, the right brim turned down against the morning sun, exactly as we wore our slouch hats in Africa, his grey hair en queue in the now failing fashion, rides a grey Arab, and is cursing the carelessness of some of his rascally dragoons who have allowed some Pindharees to get at part of his baggage train. He is furious and complains of being at the mercy of a damned incompetent staff and a pack of drowsy troopers "as I was at Castlebar by gad", though for the matter of fact both staff and troopers had served him right well, as he fully recognised. Ever since he had been badly surprised by the French in Ireland, however, anything of the nature of an inroad upset his good humour.

Behind the general came the main infantry columns headed by the famous 76th Foot (now suitably enough the 2nd battalion of the Duke of Wellington's Own West Riding regiment) in short scarlet jackets and high felt hats like an old gentleman's bowler, white breeches and high gambadoes, or as much of them as a year's wear and tear had left, also H. M. 75th and the 1st Bengal Fusiliers. With them marched four staunch and veteran battalions of Bengal Native Infantry, at a time when the old Bengal Army was at its zenith, and had not fallen into the hands of faddists to its bitter undoing, *viz.*, the 2nd, 9th, 22nd, and 15th Native Infantry.

The 76th had been through the campaign since the beginning, had stormed the astounding fortress of Aligarh and borne the brunt of the onslaught of the Mahrattas at Delhi, and led the attack at Laswaree, at a time when they were the only European Infantry with the force. They were

indispensable to General Lake, and like Prince Kraft and his Corps Artillery, in the morning he would call for his boots and his 76th Foot, and then attack. In the capture of Deig the week before, it was the 76th that had the place of honour and the most losses. Their casualties had been very severe in the campaign and the whole battalion had practically been replaced once.

With the British troops marched four sepoy battalions, in scarlet cut away jackets and short white drawers that left their legs free and bare. Their head gear was a low black shakoe, that had not yet developed into the monstrosity of later days and their arm was the old flint fusil with the long bayonet. With the infantry lumbered the foot artillery, nines and twelves, and then the long yokes of bullock drawing the forty pounder trains with tumbrils and mortar beds and all the impedimenta of a siege train. The long baggage trains of an army are much the same all the world over, and in one century as in another. The general appearance would be much the same as in India to-day, save that elephants are fewer and baggage far less.

On January the 2nd, 1805, the Army swung into position before Bhurtpur, in which Ranjeet Singh, the Jat Rajah, with a large force of Jats and Mahrattas had ensconced himself. Outside bodies of Holkar's cavalry hung about, having recovered from their previous beating, and with them was Jeswunt Rao himself, and Amir Khan, the Pindhari leader, as well, with a large following of horse. The outer wall of Bhurtpur some four miles in circumference had an appearance of immense strength, consisting of huge bastions and curtains of solid masonry, covered with a thick layer of mud bricks. The bastions were extremely lofty and guns innumerable bristled from the tops, while round the whole ran a wide ditch crossed by narrow causeways and into which water could be admitted by a canal connected with a jheel hard by.

The General's first idea was to put his 76th at it and take the place by storm, and it is probable that the elan and determination of his troops, added to the prestige they had acquired, would have induced success. There is little doubt that Delhi would have fallen to an assault following on the battle of Badlika Serai, and the first return of the masters to the ridge, or even that Sebastopol would have yielded to a prompt advance of the Allies. The solemn preparations for a siege mean that every weak point is thoroughly defended and the assault indefinitely delayed.

General Lake allowed himself to be persuaded, and sat down to a siege with a very inadequate siege train. His shot and shell penetrated the thick mud coating of the walls without doing any damage. On the 7th of January some infantry stationed outside the walls were dislodged and batteries at once established. By the 9th a rough scramble alley had been battered on the face of one bastion, and the impatient General ordered an assault for that night at 8 P. M. Three columns formed for the storming and filed out of camp in the still of the evening. The centre column consisting of the flank companies of the four European battalions and a native battalion, led the attack under Colonel Maitland, the leading men of the 22nd swum the ditch and scrambled up the wall, in the dark they were not followed immediately, and the surprised garrison hurrying to the ramparts had time to get to their breast works and open a heavy fire on the stormers. The flank columns are delayed by unexpected obstacles and come to the support late, and the men of the 22nd are forced back with heavy loss. Colonel Maitland himself is killed in leading the centre column to a second attempt and nearly every officer being down, the force make their way back to the trenches baffled more than beaten. Five officers and 85 men were killed, and 24 officers and 371 men wounded, but General Lake cheery and resolute, issues a hearty order, decides to have at them again, but by daylight this time, and at 3 P. M. the afternoon of the 21st a storming party consisting of detachments of the 22nd, 75th and 76th, equipped with ladders and portable bridges, head once more for the ill-omened breach. Behind follow the remainder of these corps and the 9th, 15th and 22nd Native Infantry, the whole under Colonel McRae. The defenders have not been idle since their victory and a number of guns from the parapets have been collected round the breach, jingal and zumboorak, field piece and sher butcha and every devil mouthed contrivance that can belch old nails and grape open on the stormers as they breast the breach. As success seemed impossible under the circumstances and men are falling in scores, Colonel McRae draws off his force with a loss of 18 officers and 573 men.

The General is nothing daunted and thanks his men in a hearty order for their efforts and cheers their spirits by falling on Amir Khan, the Pindharee leader, who had ventured to tamper with convoys meant for better men than he. After this diversion, the besiegers take matters quietly, pounding

solidly away at walls that crumble but slowly, till on the 10th of February more fresh blood is added in the shape of reinforcements from Bombay under Major General Jones. By this time the besiegers had prepared large quantities of rafts, ladders and fascines, while regular approaches had been made and the siege batteries pushed close to the walls. A mine had been laid to blow up the counterscarp, and at 4 P.M. on the afternoon of the 20th of February, the third assault took place.

The command was entrusted to Lieutenant-Colonel Don who had greatly distinguished himself in Monson's disastrous retreat. The Bombay troops formed the bulk of the two flank columns and the centre was furnished by the original troops of the force, the 76th of course leading. The enemy had made two desperate sallies during that morning and the night before but had been repulsed, not without severe loss to the besiegers, and the dead lay still about when the assault started. Something went wrong, what exactly is hard to say, the troops in the centre column were probably stale—they had fair reason to be. Fearing a mine they hesitated at the foot of the breach, in vain Colonel Don urged and incited them, the men, the famous and invincible 76th would not look at the breach, in vain a forlorn hope of the 22nd sacrificed itself, in vain a few sepoys attempted the breach. The men were stale, badly stale, and hung about at the foot of the rubble only to lose heavily. The 32nd Native Infantry with two guns tried the breach once more, while a column of the 86th entering one tower, captured eleven guns and actually removed them but were unsupported. The defenders sprang a mine, and this added to the confusion, so that the attempt was abandoned, though fourteen officers ran to the front and tried to persuade the men to take advantage of the enemies' confusion. The loss was 28 officers and 894 men, to the chagrin of the General. Nothing daunted however he decided to renew his attack next day since the failure of the last seemed due to exceptional reasons. He addressed the troops on parade regretting the misconduct of the Europeans, referring to it more in sorrow than in anger, and called for volunteers for a storming party. Lieutenant Templeton of the 76th offered to lead the forlorn hope. At three o'clock of the next afternoon, the fourth assault commanded by the gallant if unthinking Brigadier Monson, filed out to the foot of the breaches, with a fine

enthusiasm that spoke volumes for the discipline of those days. The troops were furnished by the 1st Europeans, the 65th and 85th Foot, and three battalions of Bengal Native Infantry, with every siege gun that could be brought to bear joining in, till very Hell seemed loose.

In vain, however, forlorn hopes struggled up the glacis, in vain sepoy and soldier vied with each other for the place of honour while staff officers shouted and regimental officers died in trying to lead the rank and file to impossible feats. Down the rubble slopes of the steep breaches over the masses of corruption that were once smartly accoutred British soldiers and the debris of shot and shell in the ruins half a score of cannon belched grape and canister and scrap iron, till close on a thousand of the stormers lay piled high, a horror and an offence in the sinking sun.

Dogged had failed to do it, for once in Lord Lake's career and the Brigadier sullenly withdrew his broken columns. Thirty-four officers and 987 rank and file was the butcher's tally that night.

The four assaults had cost the British 103 officers and 3,100 men, while the siege guns were worn out and the ammunition expended. The siege was therefore changed to a blockade, since loose his grip the General would not, and soothed his temper by falling on Amir Khan and Holkar, who had dared harass his rear once more. On this Ranjeet Singh of Bhurtpur, weary of a defence which held little promise, expressed his readiness to treat, and finally agreed to render up the territories we had given him from those taken from Sindia, and to pay twenty lakhs of rupees towards the cost of the war. Defeat could have hardly cost him more dear.

Lord Lake, for he had been raised to the peerage, "of Delhi and Laswarree", a fact on which the Bhurtpur Rajah had sent out to congratulate him in the middle of the siege, now turned once more on the irreconcilable Holkar and chased him North till he fled for safety to the Punjab, when the Great Marquis Wellesley having been recalled, a peace-at-any-price Viceroy, Sir George Barlow, ordered Lake to return, and restored his dominions to Jeswunt Rao.

So though Bhurtpur had been content to purchase peace, yet throughout the length and breadth of Hindustan went the story of the invincible British, the cursed *Angrez*, four times hurled back from those grey mud towers, so that men said what one has done another may do, and every native prince in the

land let hope rise in his breast, Bhurtpur blustered and swaggered, and built an immense new tower to his walls with the skulls of the British dead, but did not mention the twenty lakhs he had paid to loose the grip outside.

So after that whenever the hand of the English fell heavy on the East, men would say "Yah! bully us, but go and take Bhurtpur" and into that walled city gradually went for sanctuary half the ill-gotten treasure in Upper India. Thus closed the episode of the First Siege of Bhurtpur.

THE SECOND SIEGE OF BHURTPUR.

For twenty years the "*Fateh Burj*", the Tower of Victory, with its plinth of skulls, stood as a mark of promise to Hindostan. War succeeded war, potentates fought against the Pax Britannica from the south and west of India to Burma and the Himalayas, and all the time the taunt was in men's mouths "Go take Bhurtpur", though the government believed it not. After the fiascos and overwhelming losses from folly and disease, that marked the first year of the now forgotten Ava campaign, the first of the three Burma wars, the prestige of the "Huzoors" did not stand high in the land, and the Pindhari Barons and Mahratta Chiefs finally conquered in 1817-19, all looked for a sign.

In 1823 died Ranjeet Singh of Bhurtpur, and a brother succeeded to the throne, to be shortly after poisoned by a nephew who seized the gaddi, and imprisoned the rightful heir, a lad some five years of age. The successor to Ranjeet Singh had been recognized by us and in the interest of his son, Doorjan Sal, the wicked nephew was declared a usurper. Sir David Ochterlony, he who twenty years earlier had defended Delhi against Holkar's hordes, on behalf of the Governor General, denounced Doorjan Sal and ordered a force to assemble and move at once on Bhurtpur, since he knew and none better, the foment of which the walled city was the centre. On this the Governor General Lord Amherst, with an army and a treasury heavily taxed to maintain the Burma war, ignoring the danger, refused to ratify Sir David Ochterlony's action and ordered the army to withdraw, Doorjan Sal making profuse promises of early reinstatement of the rightful heir to the throne. Sir David Ochterlony died shortly after, broken in heart at the rebuff and his supersession.

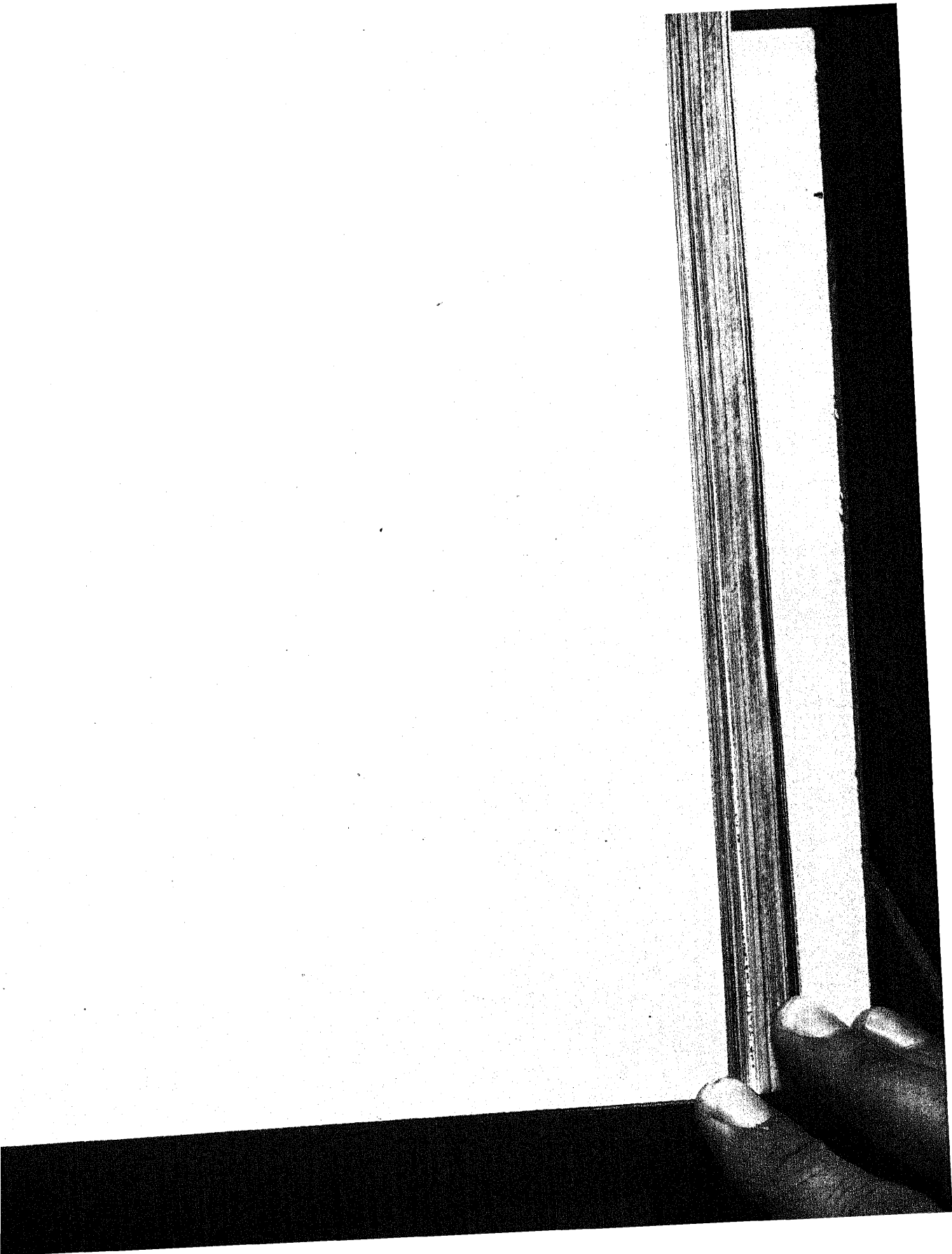
Relieved of the approach of the terrible "Lony Ochter," Doorjan Sal collected arms, powder and artillery and sent messengers to all the princes and states of Central India asking for support, and it was not till he had made his position extremely strong that the Government recognized that the action of Doorjan Singh was a test case and all India the court. In December 1825 a force of some 27,000 men with a big siege train moved on Bhurtpur under Lord Combermere, the Commander-in-Chief. By the 11th December the city was invested with a cordon $15\frac{1}{2}$ miles long. The same tall walls of solid mud that had baffled Lord Lake still surrounded the city, and the Motee Jheel still supplied water to the moat. Guns innumerable crowned the walls and 25,000 Jats, Pathans, Rajputs defended the city and its immense store of treasure. Lord Combermere's left wing surprised the Jats in the act of cutting the dam that opened the moat to the waters of the jheel and thus prevented the ditch from becoming an obstacle.

There is a story of the old Duke and the Court of Directors who had applied to him for advice on their selection of a Commander-in-Chief. He recommended Combermere, to which they demurred, saying that they understood that Lord Combermere was not a man of great brain. "Damn his brains", said the Duke, "I tell you Combermere is the man to take Bhurtpur". The Commander-in-Chief spent nine days in survey and reconnaissance, and finally decided to attack from the East, but made a feint of coming from the South-West as did Lord Lake. Under cover of this feint the cordon was drawn far closer, and two important positions on the East were taken up, a desperate sortie being repulsed on the twenty-third, made with the object of attacking the first parallel which was within some 600 yards of the walls. Owing to the nearness of this parallel the Jat guns could not be depressed sufficiently to reach the British batteries. On the 24th all women other than those of the Royal family were permitted to pass out and on the 25th a large force of the defenders' cavalry succeeded in cutting their way out. By the 26th the Jat guns were silenced and the second parallel was dug some 250 yards only from the city and by the 28th the approaches were within twenty yards of the walls. But in this "Strange and gigantic concrete of earth" breaches, as Lord Lake found, were no good. On the left a battery of 14 heavy guns, had battered one curtain for a week without making any real impression. Every heavy gun in upper India

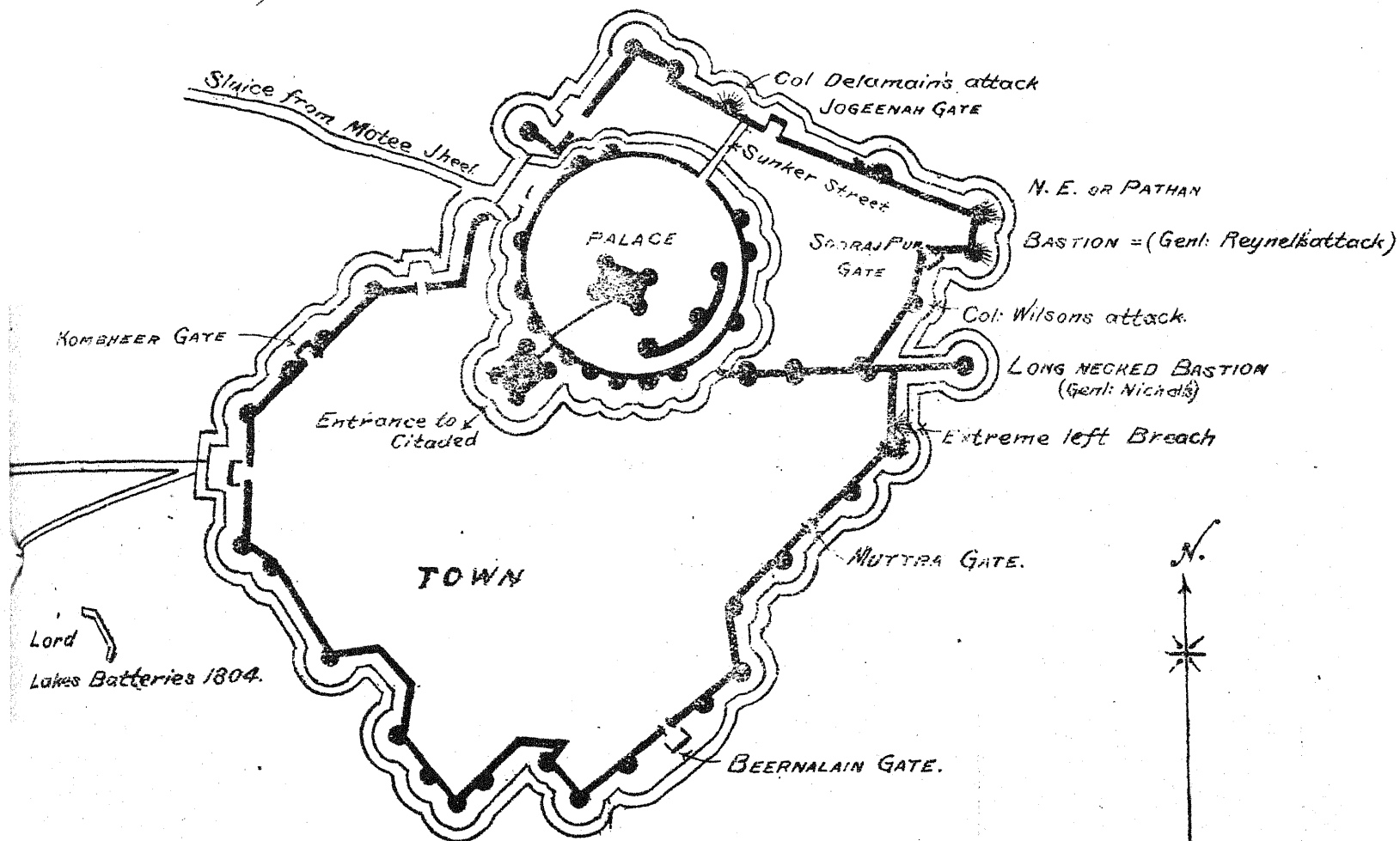
had been brought to the siege and there was not an eighteen pounder to be found elsewhere, at any place north of Allahabad, so on the 6th of January it was decided to mine under the ditch to the big bastions. On the 7th a shell from the city blew up one of our ammunition tumbrills, and this exploded an adjacent magazine of 20,000 lbs. of powder, a heavy loss. The bombardment continued to distract attention from the mining. On the 13th, 1,808 shot and shell were fired into the city, and on the 15th, 1,416, rising to 1,894 on the 16th. The garrison continually sortied at night, with great resolution. Our own mines more than once met the enemy countermining and on the 8th some mines exploded to give entrance to the counterscarp, where 16 Gurkhas surprised some 60 of the enemy and destroyed them. It had been rumoured that the big breach by which a scramble way led to the top, had been repaired and on the 20th five Goorkhas and half a dozen British volunteered to reconnoitre. They gained the top unmolested, fired a volley on the defenders, and hurled stones creating a great panic, escaping with only the loss of one of their number. Feeling was running high among the besiegers for some prisoners captured by the Jats had been mutilated and put to death. A curious incident was the desertion to the enemy of a Corporal Herbert of the Bengal Horse Artillery who had been reduced. He took an active part in working the enemy's guns, directing them with success on Lord Combermere's camp, and was finally hanged by us for his pains, on the capture of the city.

It was decided to make the attack on the "Long-necked" Bastion and the North-East angle, and two mines under the former were exploded on the 16th bringing down the clay case with brick core and all the guns on top. The mine under the North-East bastion was complete on the 17th, filled with 10,000 lbs. of powder, and fitted with a train 300 yards long.

It was arranged to spring the mine and then assault in two main columns, one under General Nicholls against the "Long-necked" Bastion and the other under General Reynell against the North-East Bastion. A third column under Colonel Delamain was to attack a breach made by battering close to the Jageenah gate. A subsidiary column from General Nicholls' force was to assault a battered breach on the left of the "Long-necked" bastion, and another force under Colonel Wilson was to turn to the right at the ditch and attack at outwork (*vide* plan attached).



The 2nd Siege.



HAND SKETCH OF BHURTPUR

Before dawn on the 18th all the stormers had occupied the trenches and only awaited the explosions. The defenders with an intuition of what was going forward opened a heavy fire at daybreak till it was announced at 8 A. M. that all was ready. The mine by the breach near the Jageenah Gate was sprung first and then that in the counterscarp, west of the north-east angle.

These explosions brought the garrison crowding to the walls, eight hundred Pathan warriors rushing to the parapets of the huge North-East bastion which it was their duty to hold. Immediately the mine under this latter with its 10,000 lbs. of powder was fired. The ground heaved and rocked, and with a dull heavy roar, half the bastion lurched and rose sullenly in the air, followed by clouds of thick pungent smoke carrying high into the air guns and gabions, Pathans, banners, swords and matchlocks to be strewn in their descent in one horrid confusion of mangled flesh and broken metal. Three hundred of the Pathans had been blown to pieces. As the smoke cleared, Reynell's leading brigade, who had also suffered somewhat from the explosion, consisting of a wing of H. M.'s 14th, the 58th Bengal Native Infantry and 100 Goorkhas of the Nusseeree Battalion, dashed at the reeking breach, while half a minute later Nicholls' column with loud cheers, went at the "Long-necked" Bastion. The defence of the Pathan Bastion by the survivors of the explosion was desperate in the extreme, and both Reynell's brigadiers, McCombe and Patton were struck down in the breach, only 75 of the defenders escaping with their lives.

On reaching the summit of the Pathan (North-East) Bastion, the first brigade, now led by Major Everard, turned to the right, and the second under Major Bishop swung to the left. These latter soon joined Nicholls' right which had diverged after the "Long-necked" Bastion had been carried. Brigadier Edwards who led this assault had been killed and his brigade much knocked about, so that it was not till Fagan's second brigade came up that this force penetrated beyond the summit of the bastion they had won. Nicholls' reserve Brigade under Brigadier Adams succeeding in entering the city by the Muttra Gate, and clearing the streets.

Away on the British left Colonel Delamain's column, whose breach by the Jageenah Gate had been the first to be exploded, scaled the parapet and succeeded in forcing the defenders towards the gate, where there was a deep alley way

some sixty feet below the rampart level, with only one flight of narrow steps leading down. As Delamain forced the Jats back on to this chasm, Everard's column came up from the east, and thus a number of them were penned in, with only the deep hollow street below them. Refusing surrender, they fought on with desperation, till hurled pellmell into the abyss. Some hundreds lay there dead or dying, their padded cotton coats catching fire adding to the horror, while their exploding bandoliers made any attempts at rescue a perilous one.

By this time Lord Combermere had come to the Jageenah Gate and received the news that a short time previously Major Hunter of the 41st Native Infantry had pursued a party of the garrison into the Palace and inner fort, and that Khoosial Singh, brother-in-law of Doorjan Sal, with a hundred followers had been shut out of the palace and refusing to surrender had been killed. Guns were sent to blow in the gates and it was finally found that Doorjan Sal and his immediate following had escaped by the Combheer gate cutting down a picquet of H. M.'s 14th who had opposed them.

Outside, the cavalry under Brigadier Sleigh had captured 6,000 fugitives, and at half past two in the afternoon, seeing no sign of more, the Brigadier had dismissed his brigade. Hardly had this been done when the riding master of the 8th cavalry reported horsemen in the jungle and Lieutenant Barbor with his troop being ordered after them, was saddled up in time to capture Doorjan Sal himself, with his wife and child, the former surrendering with Barbor's pistol at his head.

In the meantime the whole city was in our hands, with the 37th Native Infantry in the inner fort, their king's colour floating from over the gateway to the cheers of the soldiery. Next morning the Commander-in-Chief and his staff breakfasted in the palace and the rightful heir, the son of the murdered Baldeo Singh, was reinstated, but in future as a vassal and dependent of the British. The Army then marched off for the frontier of Alwar taking with them the usurper Doorjan Sal, who was maintained as a detenu at Benares.

Thus ended the siege of Bhurtpur, and thenceforward no state remained south of the Sutlej to dispute the sovereignty of the Huzoors.

Of the twenty-five thousand or so said to have been the garrison of the city, it is believed that 13,000 were killed or wounded and that 4,000 perished in the grand assault, so that men said that no wise men would ever again quarrel with the

Sirkar. One hundred and thirty-five pieces of ordnance were captured, and immense treasure, of which the troops were granted a large portion of prize money (some £480,000). The total British loss was under eleven hundred, a very different tally from that of the first siege. Two years later Lord Combermere went there on a visit and was well received, though in the strain of the mutiny, the Jat Contingent naturally enough, went with the majority.

Among the troops forming Lord Combermere's force, were the 11th Light Dragoons, 1st and 8th Bengal Cavalry, 14th and 59th foot, 1st Bengal Fusiliers, and the 1st, 2nd, 3rd, 4th, and 66th Native Infantry, with the Sirmoor and Nasseeree Rifle Battalions, as well as a large force of Bengal Artillery both British and Native.

REFLECTIONS ON RUSSIAN STRATEGY IN MANCHURIA IN 1904.

By W. B.

For convenience of reference a brief summary of the principal events of the war is given below.

Diplomatic relations between Russia and Japan were broken off on the 5th February, and offensive action by the Japanese navy followed almost immediately, the first bombardment of Port Arthur taking place on the 8th *idem*.

On the 10th February, declarations of war were promulgated by both belligerents. Various naval encounters ensued in the immediate vicinity of Port Arthur, in which the Japanese invariably took the offensive and caused considerable damage to the Russian fleet, though more than one desperate attempt to close the harbour failed.

On the 21st February, General Kuropatkin, Russian Minister of War, was appointed to the chief military command.

On the 28th February, the opposing land forces came into touch near Pingyang in Northern Corea, and a month later the affair of Chong-ju took place, in which the Russians were forced to fall back.

On the 13th April, the Russian 1st class battleship "Petrovpavlovsk" was blown up by a mine and sank off Port Arthur, Admiral Makaroff, the Naval Commander-in-Chief, and 600 officers and men being drowned.

On the 30th April, the 1st Japanese army under General Kuroki, crossed the Yalu river, and the following day defeated the Russian left wing and captured Chiu-lien-cheng.

On the 5th May, a portion of the 2nd Japanese army was successfully landed on the Liao-tung Peninsula, and on the 8th *idem*, Port Arthur was practically isolated by the cutting of the railway at Pulantien.

On the 15th May, the Japanese fleet suffered a heavy loss by the sinking of the battleship "Hatsuse" and the cruiser "Yoshino."

On the 26th—27th May, the Russians were driven from their position at Kinchau; Nan-shan was also captured, together with 78 guns.

On the 14th—15th June, General Stackelberg's southward advance against the Japanese force met with disastrous results at the battle of Wa-fang-kau (Telissu), and he was obliged to beat a retreat northwards.

On the 20th—27th June, the Japanese 1st army occupied the Feng-shui, Motien and Ta Passes.

On the 8th July, the Japanese Army captured Kaiping.

On the 17th July, General Count Keller made a determined counter-attack on the 1st army at the Motien Pass, but was hurled back, he himself being killed.

On the 24th—25th July, the Japanese 2nd army attacked and occupied Tashihchiao, and on the latter date entered Niu-chwang.

On the 30th—31st July, the Russian force confronting General Kuroki met with further reverses, and a general retreat was ordered.

On the 2nd August, Haicheng was evacuated by the Russians.

On the 10th August, a naval sortie from Port Arthur was made. The battleship "Tsarevitch" and three destroyers reached Kiau-chao, and the cruiser "Askold" and destroyer "Grosvoï" arrived at Shanghai, the remaining ships putting back into Port Arthur, for the most part damaged.

On the 14th August, Admiral Kamimura defeated the Vladivostok squadron, sinking the "Rurik" and damaging the cruisers "Rossia" and "Gromovoi."

On the 23rd August, the Russian main army held a chain of advanced positions to the south of Liao-yang, their principal advanced base. On this date the left column of the 1st Japanese army commenced operations, and by the 25th *idem* had made considerable progress. The centre column carried the Russian main position at Kung-chang-ling, driving the enemy back into the valley of the Tang-ho.

Meanwhile the 2nd and 3rd armies advancing on An-shanchan, dislodged the Russians from their positions covering that place.

By the 28th August, the Japanese had occupied all the Russian advanced positions, and driven the enemy in towards Liao-yang. The succeeding days witnessed fierce and uninterrupted fighting, Kuroki's flanking movement being for a time checked by a vigorous counter-attack by the Russian left. But meanwhile the 2nd and 3rd Japanese armies were pressing forward with relentless pertinacity, and, finally, on September 3rd Kuropatkin had to acknowledge defeat and

make good his retreat to the north, the Japanese entering Liao-yang unopposed in the early morning of September 4th. The Japanese advanced to the north of Liao-yang, and occupied the Yentai mines and other advanced positions.

From this time until the issue, early in October, of Kuro-patkin's famous order setting forth that the time for offensive movement had arrived, things remained quiet in this theatre of the operations. The Russian advance across the Sha Ho was the signal for the renewal of fighting, and from the 9th till the 21st October many fierce encounters took place, resulting in the complete defeat of the Russians, and their retirement once again across the Sha Ho, the latter river giving its name to this series of fights.

Until the end of the year both armies remained facing one another on the Sha Ho, operations being restricted to intermittent and unimportant skirmishes between the advanced units.

Meanwhile the fate of Port Arthur was being slowly but surely sealed in the south. As has been noted above, it was practically cut off during the first week in May, and from that time onwards the Japanese General Nogi with grim determination proceeded with the task of reducing it. The operations were creditable to both belligerents, the unflinching self-sacrifice and valour of the attackers being met by a brave and dogged resistance on the part of the defenders.

Position after position, however, fell into the hands of the Japanese, and the year closed with Russia's naval base and stronghold in the Far East '*in extremis*,' and a capitulation together with the capture or destruction of the remnant of the Russian fleet imminent.

The following notes are written, not with any idea of giving lessons in strategy, but with a view to offer food for reflection, and to enlarge on the accompanying sketches. (The railway shown on the sketches, from Seoul *via* Wiju to Liaoyang, is that which is now under construction by the Japanese.)

Perhaps no campaign has ever demonstrated more clearly the truth that neglect of the laws of strategy brings a sure and grievous retribution.

When by the processes of diplomacy, the politicians of Russia secured for their country the possession of Port Arthur and the right to connect that port by railway with Harbin, their peace strategy perpetrated the most dangerous of all

strategic movements, *viz.*, a flank march across the front of the direct advance of a possible enemy.

As long as the eastern flank of this movement remained unprotected, either by a predominating navy or by a strong position on the Yalu, so long might Japan afford to continue peacefully her preparations for the blow on the heel of Achilles.

The Russians expended vast sums of money, time and labour on fortifying the point of a peninsula which possessed defensive and offensive value only in so far as it was useful as a base for a "fleet in being." Strategy, on the other hand, demanded that this expenditure should rather be invested on improvements in the inland communications admitting of freedom of movement in concentration of the field army on any threatened point, or in offensive operations.

The peace strategists of Russia, after witnessing the performances of the Japanese troops with the Allied Armies in China, appear to have awakened to the dangers of the situation which they had themselves prepared, and the gradual strengthening of the Russian Pacific squadron and activity on the Yalu were the result of the awakening.

Thus arrived the crisis when Japan must speak, or remain for ever silent, leaving the dream of the recovery of Port Arthur and expansion in Korea to pass away and be forgotten.

The former course was chosen on the 5th February 1904. Sketch No. I shows the distribution of the Russian Army of Manchuria on that date. (The numbers given in this and the following sketches are only approximate, but are sufficiently accurate for the desired purpose.)

The loss of the command of the sea quickly followed, and Port Arthur thus became a harbour of refuge for the Russian fleet. This consideration must be taken into account when reflecting on the further strategical dispositions adopted. It is not, however, proposed, in this paper, to follow the fortunes of the combatant navies further than to remark that the preservation of the fleet from immediate destruction demanded the inclusion of the defence of Port Arthur in the scheme of operations.

The following strategical problem now presented itself to the Russian Commander. (Perhaps it would be more correct to say "Commanders", for it appears that at this time there were two Commanders in the field and much interference from the Capital.)

"Whilst holding Port Arthur as a haven of refuge for the shattered fleet, the left or eastern flank of a line extending

from Mukden to Port Arthur must be protected. At the same time Vladivostok and the line thence to Harbin must be held."

It is evident that the capture of Vladivostok by the Japanese and an advance thence to Harbin would necessitate the withdrawal of all Russian troops from south of Harbin, or ensure their isolation. But Vladivostok is ice-bound from the beginning of November to April and is therefore a bad base for the land operations of a sea power.

It is further to be remembered, in reflecting on this problem, that the road from Liaoyang to the Yalu was a country track over a hilly region incapable of acting as a line of supply to a force exceeding from $1\frac{1}{2}$ to 2 Divisions.

The apparent neglect of this road may, perhaps, be ascribed to the falseness of Russia's peace strategy and to the tardy recognition of the true aspects of the strategical problem by her military Commanders.

The solution of the problem by these Commanders is shown in Sketch 2.

Having traced so far the course of events, let us digress. The Harbin-Port Arthur line of railway was completed in June 1903; the distance from Liao-yang to the mouth of the Yalu is about 180 miles; a road, or, better still, a railway might be constructed at the rate of $\frac{3}{4}$ a mile a day,* therefore the main-line might have been connected by rail with the Yalu in 240 days, *i.e.*, by the end of March 1904.

Now let us suppose that the peace strategists of Russia had taken the precaution to link the Yalu to the Harbin-Port Arthur line by a railway. It matters not whether such railway ran direct from Liao-yang, or took off nearer the coast. Let us attempt to picture what might have been the result of such a precaution, allowing at the same time to the Japanese the command of the sea.

Firstly, it would have been possible to concentrate an army of 70,000 men on the Yalu by the 30th April, the date on which the actual battle was fought and lost by 19,000 men. Such a concentration must have had the effect of delaying the Japanese advance northwards from Seoul by many months, and would still have left 15,000 men to guard Port Arthur, 15,000 men at Vladivostok, 15,000 men at Harbin, and 15,000 men to resist landings at points on the coast between Port Arthur and the mouth of the Yalu or at Niu-chwang.

Note.—The Japanese have constructed their railway in Korea at the rate of '77 mile per day.

During the course of this delay the troops arriving at Liao-yang would have accumulated into a reserve stationed at the junctions of the railways ready to support any threatened point. Under such conditions the first year of the campaign might well have begun and ended on the Yalu.

Even supposing an eventual defeat on the Yalu there would have been no need for the precipitate retreat back to the main-line of rail which actually took place after that battle. A concentration on either the Port Arthur or the Yalu line would have been comparatively simple and the whole aspect of the campaign would have been changed.

It is said that the Russians claim a success on the Yalu because the Japanese were detained ten days in the crossing. How much greater would have been the claim for success had the Japanese been detained ten months or even ten weeks!

The reply to this supposition of a railway linking the Harbin to Port Arthur line with the Yalu may be that political considerations would not have permitted it, and that other nations would have objected, but this argument will not justify Russian strategy in risking war without it and, at the same time, in holding Port Arthur.

Let it be admitted, however, that, as the only excuse for the construction of the Harbin-Port Arthur line was the cession of the Kwantung Peninsula to form a warm water port which was to be linked with the Siberian railway by a Chinese railway, financed and engineered by Russians, had the latter commenced the construction of a Yalu railway at all, such action would have been a *casus belli*.

It will be seen from Sketch I, that, on the 5th February 1904, the Russians had 2 Battalions, 3 squadrons and 22 guns located at the mouth of the Yalu, and it is well known that these troops had been there some time and that the refusal to withdraw them was the ultimate cause of war. It is also well known that due warning was given to the Russian Government, not only by their own ambassadors in Tokio and Seoul, and by the Japanese, but also by the newspapers, as to the consequences of their action.

Under these circumstances it is not too much to suppose that, had the peace strategists realised the strategic importance of the Wiju position, provision would have been made for the improvement of the Liaoyang-Yalu line of communication. It would have been easy to arrange, when deciding to risk war, to send materials for a light railway to Liaoyang

and to commence work on the track. This would have been a matter of common precaution had strategical requirements received due consideration.

This light railway might have been laid at the rate of at least two miles a day, so that, between the 5th February and the 30th April, Liaoyang might have been connected with the Yalu by a light railway, and this would have permitted of a force of at least 50,000 men being concentrated there by that date. This again would have delayed the Japanese advance, which was carried out under conditions of great difficulty, from Seoul; and every day's delay would have permitted of the increase of the Russian force on the Yalu.

Thus we see the decisive influence of communications. Those of the Japanese lay over the sea, those of the Russians overland. As railways develop, the advantages of land communications preponderate over those by sea, especially when the distances are great.

Had such a railway been in existence, or had the Japanese received information showing that it could be brought into existence before the end of April, it may be thought that they might, having gained command of the sea, have been able to find some other line of advance. They might no doubt, have landed at Shanhaikwan, where the warm currents meet and the sea does not freeze.

In the advance from this port the rivers would have been frozen probably till April, and such an advance would have threatened the Russian railway communications. But the movement would have involved a violation of Chinese neutrality and might have had serious consequences for the Japanese, for, although temporary command of the sea had been gained at this time, it was not certain that such a condition would be maintained. The Japanese could not know that the Baltic fleet would be "a day too late for the fair"; and a Japanese army based on Shanhaikwan would have been in a perilous position in the event of a defeat.

The aim of strategy is directed, either at the communications of an army, or at the army itself. By their advance from the Yalu the Japanese effected a combination of these aims. Having due regard to the safety of their own communications they could not have combined these aims, and so prepared the way for a landing on the Kwantung Peninsula, by an advance on any other line. Here, in the event of a defeat, they could fall back on to Korea and the evil effects of a possible loss of sea command were reduced to a minimum.

We have seen that strategy demanded of the Russians that, for defensive purposes, the Yalu should be held in strength. But a purely defensive strategy cannot end a war nor gain great successes. Japanese ambitions rested on Korea and, therefore, whether command of the sea were retained or not, Korea was clearly indicated as the Russian first objective. Thus it will be seen that for offensive purposes also the Liaoyang-Yalu line was a *sine quâ non*.

So obvious are the conclusions deducible from the above arguments that the failure of Russian strategy to be guided by them can hardly be attributed altogether to ignorance. There seems little doubt that contempt for their enemy had a great effect on their strategy, and that they entered on the war with a light heart, despising the Japanese army.

Thus the element of surprise, so fruitful of results not only in the tactics but in the strategy of war, was introduced; and herein lies a lesson for those of our peace strategists who are prone to boast of "Britain's might."

How then could the Russians have repaired their initial error? Admitting that they had been proverbially slow to move on the outbreak of war, and had been attacked before their strategical deployment had been completed, what was the proper course to pursue? Under such conditions the science of strategy permits of only one move, *viz.*, concentration beyond reach of the enemy, and clear of his flanking movement.

Their failure to comply with this axiom can only be extenuated by an argument based on the favourable conditions for defence afforded by the physical configuration of the country.

Lying at an average distance of about 25 miles east of the Harbin-Port Arthur railway, from opposite Liao-yang southwards nearly to the sea, ridges of steep hills run north and south, forming a natural barrier.

The chief passes in the main ridge are the Motien and Ta Passes leading on to Liao-yang, and the Fenshui Pass leading on to Haicheng.

Those who imagine that the Hindu Kush, the Himalayas, the Sind Desert or the Indus can, of themselves, prevent a Russian advance on India should, logically, rank themselves on the side of the defenders of Russian strategy in Manchuria.

But history may be searched in vain for an example of a determined leader, followed by determined troops, being defeated by any kind of physical obstacle.

Difficulties caused by the physical configuration of the terrain cannot be safely substituted for sound strategy, and, as will be seen from a study of this campaign, physical obstacles are of advantage to those only who know how best to adapt them to their own uses.

The opening up of the best possible means of communication between the railway and the passes, in order to admit of rapid concentration on any of these and, should the enemy approach, as he did, by all the passes, to admit of his defeat in detail was an elementary strategical consideration which appears to have been disregarded. But even had this been done and the passes denied to the Japanese, the initial strategic error of facing to a flank permitted of the hills being turned, as they were, by the landing of the Japanese on the Liaotung Peninsula.

After the defeat on the Yalu we find the Russian Army in a strategical situation which has been condemned by all strategists as the worst possible, *viz.*, that of facing to a flank.

In such a position, as is well known, the Commander must fight with one eye on his line of communications; and with the ever-recurring danger of being outflanked.

The first result of this situation was the rupture in the Russian line Mukden-Port Arthur, which occurred in May when the Japanese, having been permitted to land on the Liaotung Peninsula and cut the railway, won the victory at Nanshan and isolated 40,000 men from all further participation in the operations of the field army, see Sketch 3.

It is for consideration whether 10,000 men would not have been sufficient to guard the fortress long enough to give the fleet a chance of regaining the lost command of the sea and to permit of the field army, thus strengthened by the remaining 30,000 men, marching to the relief of the garrison, or striking hard at any attempt at landing to cut them off.

Henceforth, until the fall of Port Arthur, there were two fields of operation and the strategic position now assumed, for the Russians, the form of the following problem:—

"The supply of provisions and ammunition in Port Arthur is sufficient, with the assistance of blockade runners, to enable the garrison of about 40,000 men to stand a siege of 9 months. The line now to be defended by the field army extends from Mukden to Telissu. The enemy's advance is directed on the Fenshui, Motien and Ta Passes from the direction of the

Yalu. The strategic front is threatened by a force advancing from Nanshan and Pitsewo."

The Russian solution of this problem appears to have been a half-hearted attempt to crush the 2nd Japanese Army advancing from Nanshan, whilst maintaining sufficient force on the line of railway to hold the advance of the 1st Japanese Army from the Yalu. The dispositions are shown in Sketch No. 4, and resulted in the defeat at Telissu.

The Russian line was now contracted to Tashichiao, and the problem was further complicated by the landing of the 4th Japanese Army at Takushan Bay, and its advance on the left flank of the Tashichiao position; the occupation of the Fenshui, Motien and Ta Passes, by the Japanese 1st Army; and the occupation of Kaiping by the 2nd Japanese Army which had advanced from Telissu.

The Russian reply was a fierce attempt, on the 17th July, to recapture the Motien Pass, from which position the Japanese threatened Liao-yang and the line of communications. By the failure of this attempt a general retirement on Liao-yang became a necessity and the battle of Tashichiao resolved itself into little more than a stubborn and costly rear-guard action. See Sketch 5.

The evil effects of a strategy which necessitated fighting to a strategic flank did not cease to make themselves felt at the battle of Liaoyang, when the Japanese 1st Army was, only by the greatest efforts on the part of the flower of the Russian Army, prevented from cutting off the retreat northward and from inflicting a crushing blow on the Russian forces in Manchuria, Sketch 6.

Even with the loss of sea command the constant succession of Russian reverses can hardly be accounted for, except by the ineptitude of that peace strategy which neglected to open satisfactory communication between important strategic points.

After the retreat from Liao-yang the strategic situation underwent a complete change, although the demoralisation naturally consequent on repeated defeat had left its mark. The Russians no longer suffered from the necessity of having to face to a strategic flank. What a relief to General Kuropatkin to be released from the anxiety of having to keep one eye on his communications! And hence, perhaps, his famous order of October.

The conditions now permitted him to fight on equal strategic terms with his opponent, since the 1st Japanese Army no

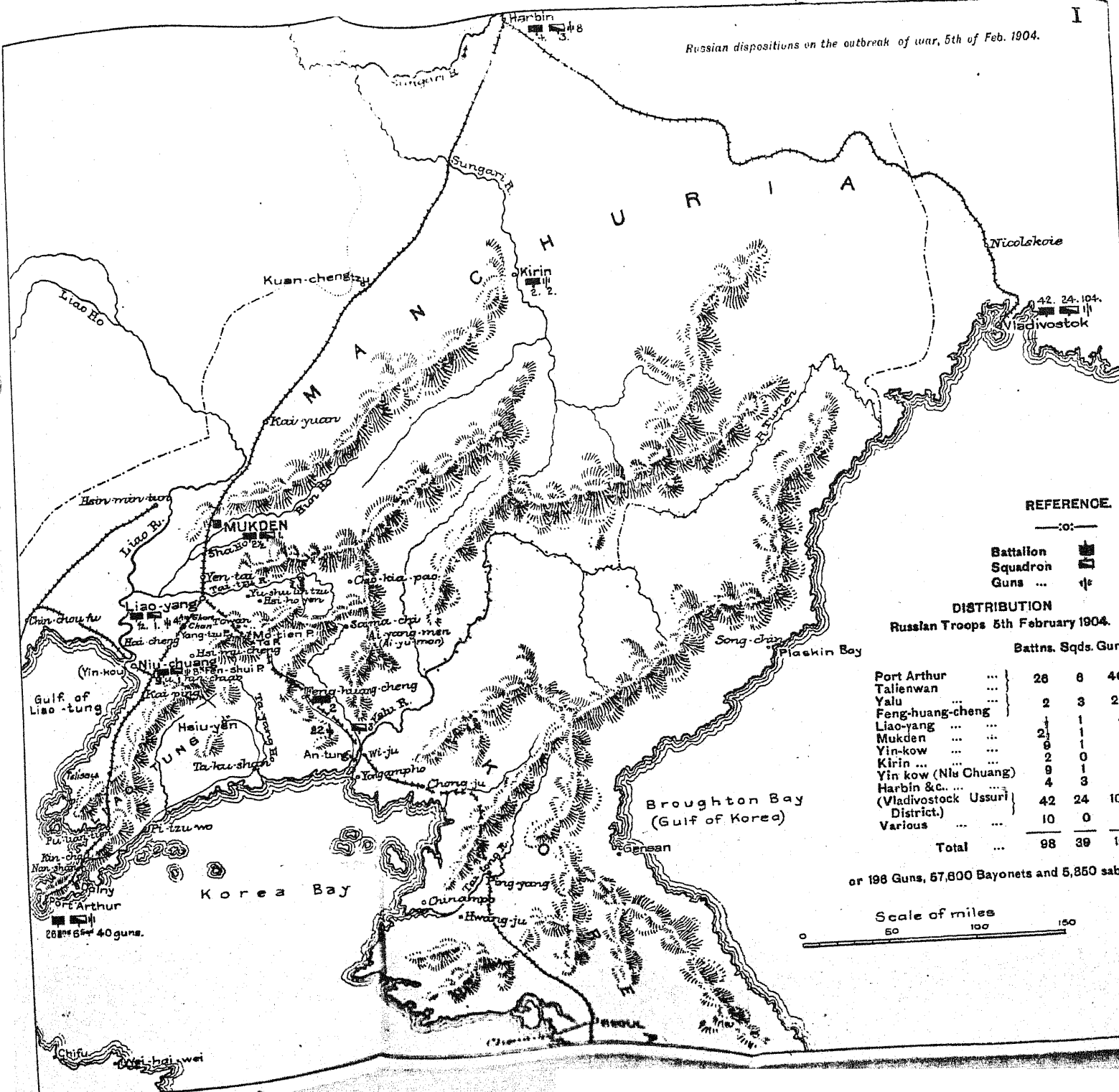
longer imperilled his left flank and line of communications. Thus, after his advance and subsequent defeat on the Shaho, he was no longer impelled to continue his retreat, Sketch 7. Strategic considerations are now confined to the strategic value of the railway on which his supplies of food and reinforcements depend and it appears that, unless a surprise is in store for us, victory rests on the capacity of the respective lines of communication, on the tactical ability of the commanders and on the personal equation as regards the troops.

For generations to come the military student will, no doubt, find fresh matter for reflection in the history of this great war. From information at present available the following appear to be the most obvious subjects for reflection:—

1. The difficulty of righting by military measures the mistakes of peace strategy.
2. The effect caused on the strategy of a campaign by the retention of a fortress which is not strategically defensible.
3. The danger of a navy which depends on the Army for its protection.
4. The vital importance of the land communications connecting strategic points.
5. The futility of a faith which depends on physical obstacles to stop an enemy's advance.
6. The enormous advantage accruing to the power which by prompt action, seizes the initiative.
7. The advantage of being despised by an enemy, and the danger of treating an enemy with contempt.

Russian dispositions on the outbreak of war, 5th of Feb. 1904.

I



I.

DISTRIBUTION OF RUSSIAN TROOPS ON 5TH
FEBRUARY 1904.(a) *Port Arthur and Talienwan.*

26 battalions, 6 squadrons, 40 guns.

(b) *Yalu-Feng-kuang-cheng and neighbourhood.*

2 battalions, 3 squadrons, 22 guns.

(c) *Ying-kou (Niuchuang).*

9 battalions, 1 squadron, 8 guns.

(d) *Liao-yang.* $\frac{1}{2}$ battalion, 1 squadron, 4 guns.(e) *Mukden.*2 $\frac{1}{2}$ battalions, 1 squadron.(f) *Kirin.*

2 battalions, 2 guns.

(g) *Harbin and neighbourhood.*

4 battalions, 3 squadrons, 8 guns.

(h) *Vladivostok and Ussuri District.*

42 battalions, 24 squadrons, 104 guns.

(i) *Various.*

10 battalions, 8 guns.

Total—

98 battalions.

39 squadrons.

196 guns.

or 57,600 bayonets, 5,850 sabres, and 196 guns.

II.

DISTRIBUTION OF RUSSIAN AND JAPANESE
TROOPS AT THE BATTLE OF THE YALU.*29th April to 1st May.**Russians.—**Ussuri District (Vladivostok, etc.)—*

22 battalions, 12 squadrons, 64 guns.

Port Arthur—

25 battalions, 54 guns.

Along coast to Ying-kou—

6 squadrons.

Ying-kou—

15 battalions, 32 guns.

On the Yalu—

21 battalions, 21 squadrons, 76 guns.

Tashichiao-Haicheng—

18 battalions, 40 guns.

Liao-yang—

19 battalions, 18 squadrons, 68 guns.

Hsin-min-tun and along Liao river.

12 squadrons.

Mukden—

Unknown.

Kirin—

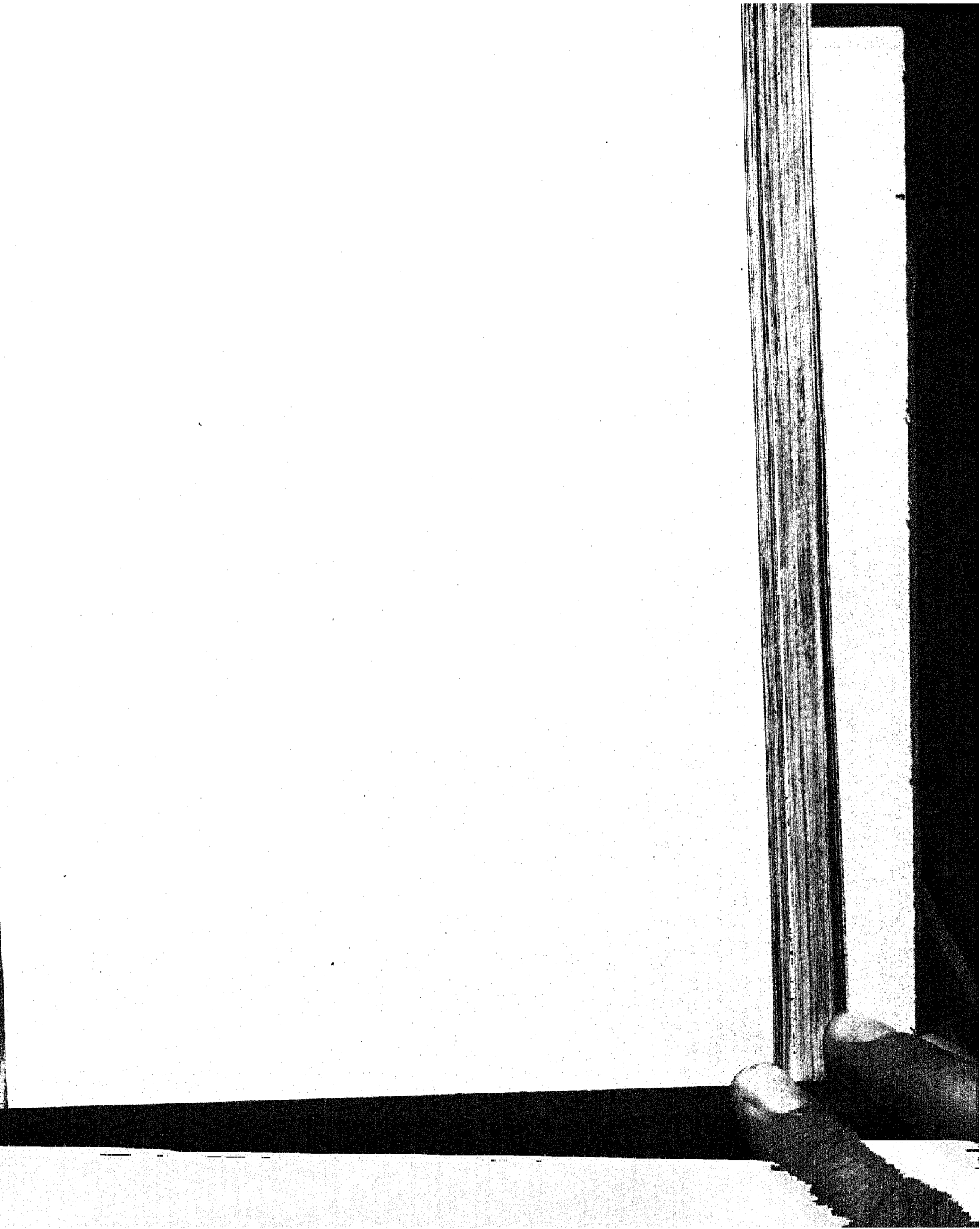
3 battalions, 8 guns.

Harbin—

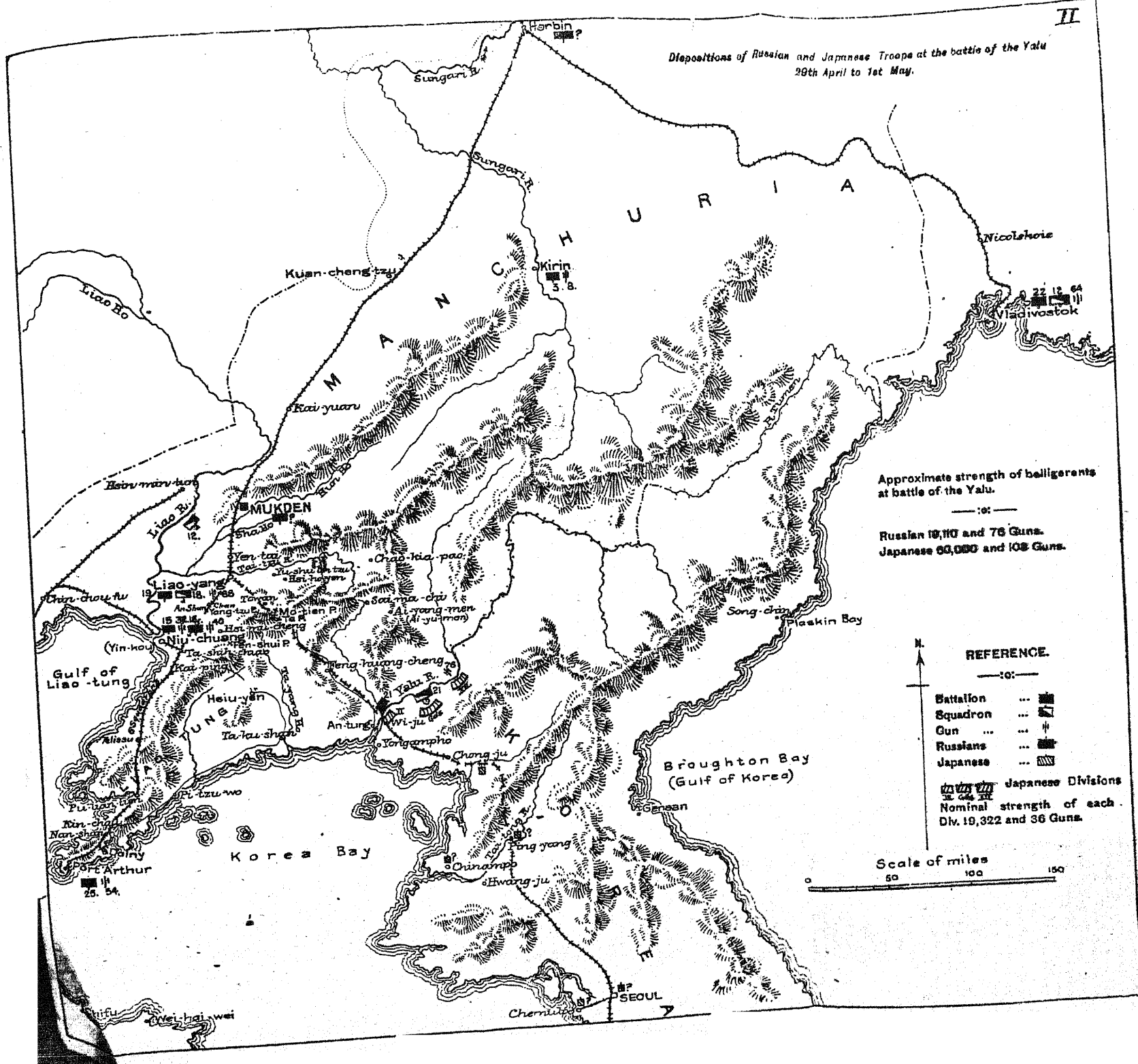
Unknown.

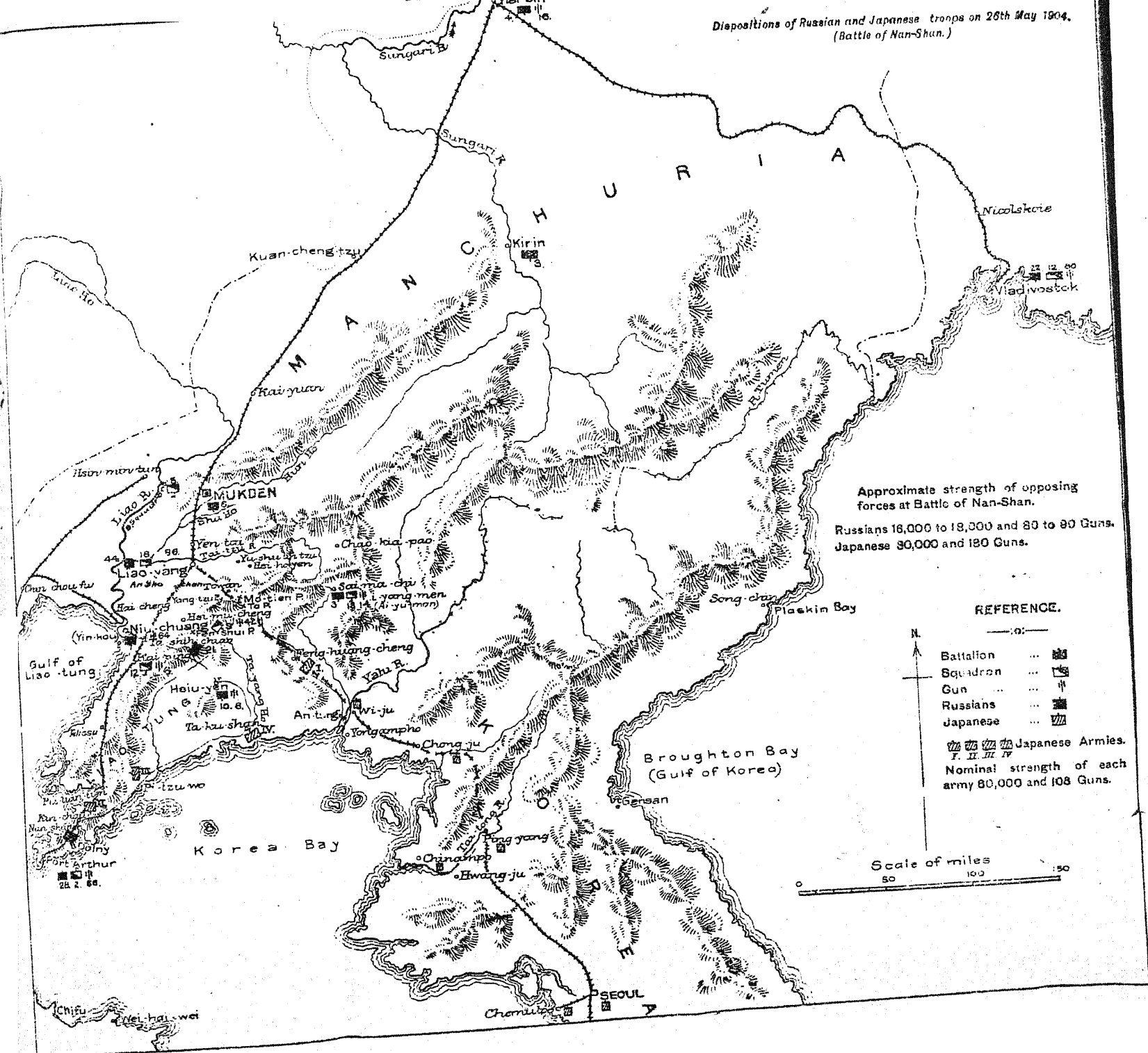
*Japanese.—**On the Yalu—*

Japanese 1st Army of 3 Divisions.



Dispositions of Russian and Japanese Troops at the battle of the Yalu
29th April to 1st May.





Approximate strength of opposing forces at Battle of Nan-Shan.

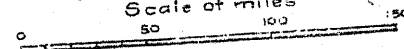
Russians 16,000 to 18,000 and 80 to 90 Guns.
Japanese 30,000 and 120 Guns.

REFERENCE.

— 0 —
Battalion ...
Squadron ...
Gun ...
Russians ...
Japanese ...

Japanese Armies.
I. II. III. IV.
Nominal strength of each army 80,000 and 103 Guns.

Scale of miles



III.

DISPOSITION OF RUSSIAN AND JAPANESE TROOPS
ON 26TH MAY 1904 (BATTLE OF NAN-SHAN).*Russians.*—*Ussuri District (Vladivostok, etc.)*—

22 battalions, 12 squadrons, 80 guns.

Port Arthur—

28 battalions, 2 squadrons, 66 guns.

Kai-chou—

12 squadrons, 6 guns.

Ying-kou—

21 battalions, 64 guns.

Hsiu yen—

10 squadrons, 6 guns.

Sai-ma-chi—

3 battalions, 18 squadrons, 14 guns.

East of Mukden near Hsin-min-tun—

5 squadrons.

Along Fenshui Pass crests—

21 battalions, 9 squadrons, 42 guns.

Liao-yang—

44 battalions, 16 squadrons, 86 guns.

Mukden—

6 battalions.

Kirin—

3 battalions.

Harbin—

4 battalions, 16 guns.

Along the Liao river—

9 squadrons.

188 DISPOSITION OF RUSSIAN AND JAPANESE TROOPS
ON 26TH MAY 1904 (BATTLE OF NAN-SHAN).

Japanese.—

Nan-Shan—

2nd Japanese Army.

Feng-huang-cheng—

1st Japanese Army.

Pi-tzu-wo—

3rd Japanese Army.

Taku-Shan—

4th Japanese Army.

IV.

DISPOSITIONS OF RUSSIAN AND JAPANESE
TROOPS ON 15TH JUNE 1904 (BATTLE OF TELISSU).

Russians.—

Ussuri District (Vladivostok, etc.)—

22 battalions, 27 squadrons, 64 guns.

Port Arthur—

28 battalions, 2 squadrons, 66 guns.

South of Kaiping (about Telissu)—

36 battalions, 21 squadrons, 96 guns.

Ying-kou—

16 battalions, 16 guns.

Hsin-min-tun and along Liao river—

10 squadrons.

Fen-shui crests—

21 battalions, 5 squadrons, 54 guns.

North-West and North-East of Sai-ma-chi—

3 battalions, 18 squadrons, 16 guns.

In Hills East of Mukden—

5 squadrons, 2 guns.

Between Haicheng and Hsin-yen—

16 squadrons, 6 guns.

DISPOSITION OF RUSSIAN AND JAPANESE TROOPS 189
ON 15TH JUNE 1904 (BATTLE OF TELISSU).

Liao-yang—

44 battalions, 18 squadrons, 118 guns.

Mukden—

6 battalions.

Kirin—

3 battalions.

Harbin—

4 battalions, 16 guns.

Japanese.—

Telissu—

2nd Japanese Army.

Port Arthur—

3rd Japanese Army.

Between Taku-shan and Hsiu-yen—

4th Japanese Army.

Feng-huang-cheng—

1st Japanese Army.

V.

DISPOSITIONS OF RUSSIAN AND JAPANESE
TROOPS ON THE 24TH JULY 1904 (BATTLE
OF TASHIHCHIAO).

Russian.—

About Tashihchiao—

38 battalions, 60 squadrons, 184 guns.

Ying-kou—

2 battalions.

Hsi-mu-cheng—

23 battalions, 12 squadrons, 70 guns.

Haicheng—

32 battalions, 124 guns.

190 DISPOSITION OF RUSSIAN AND JAPANESE TROOPS
ON THE 24TH JULY 1904 (BATTLE OF
TASHIHCH IAO).

Hsi-ho-yen (neighbourhood)—

18 battalions, 19 squadrons, 76 guns.

Lian-tien-Shan, South-East of Liaoyang, about Towan—

25 battalions, 5 squadrons, 56 guns.

Liaoyang—

8 battalions, 21 squadrons, 32 guns.

Hsin-min-tun—

1 battalion, 10 squadrons, 2 guns.

Mukden—

5 battalions, 6 squadrons.

Kirin—

2 battalions.

Harbin—

2 battalions, 3 squadrons.

Port Arthur—

Same as before.

Ussuri District (Vladivostok, etc.)—

Same as before.

Japanese.—

Tashihchiao—

2nd Japanese Army.

Hsiu-yen—

4th Japanese Army.

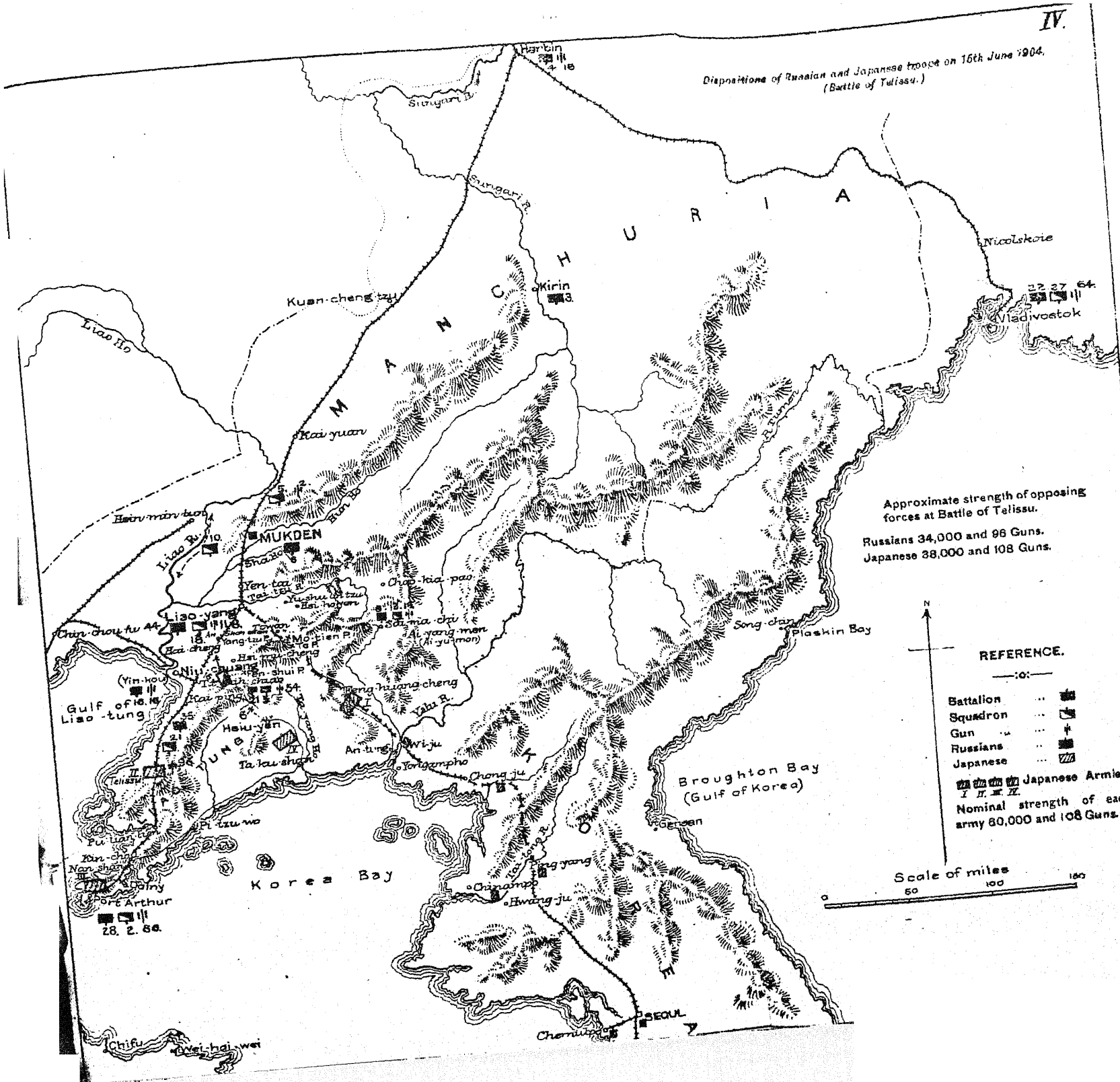
Port Arthur—

3rd Japanese Army.

Motien Pass—

1st Japanese Army.

Dispositions of Russian and Japanese troops on 15th June 1904.
(Battle of Telissu.)

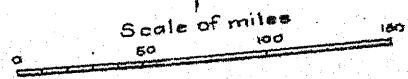


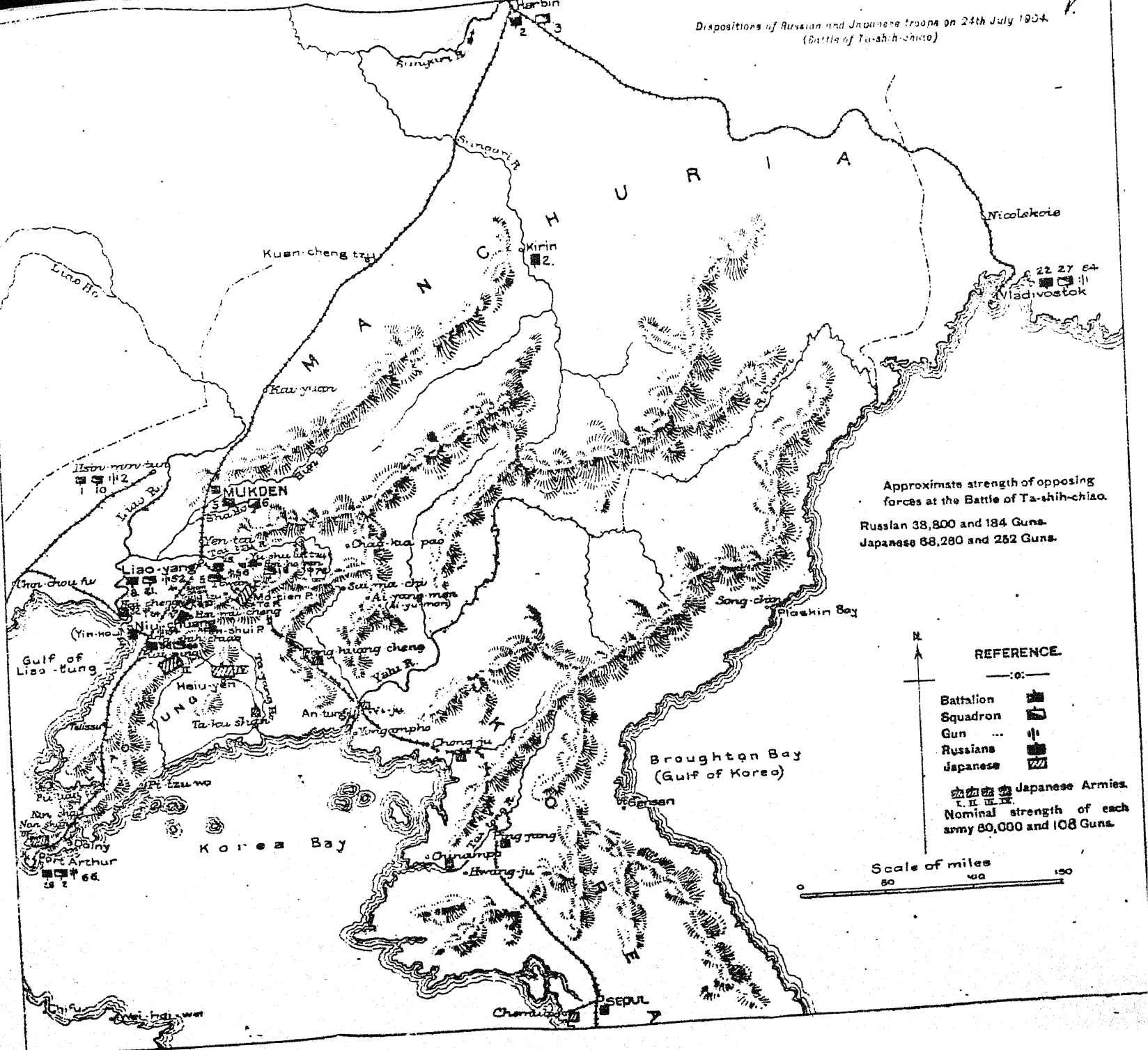
Approximate strength of opposing forces at Battle of Telissu.
Russians 34,000 and 96 Guns.
Japanese 38,000 and 108 Guns.



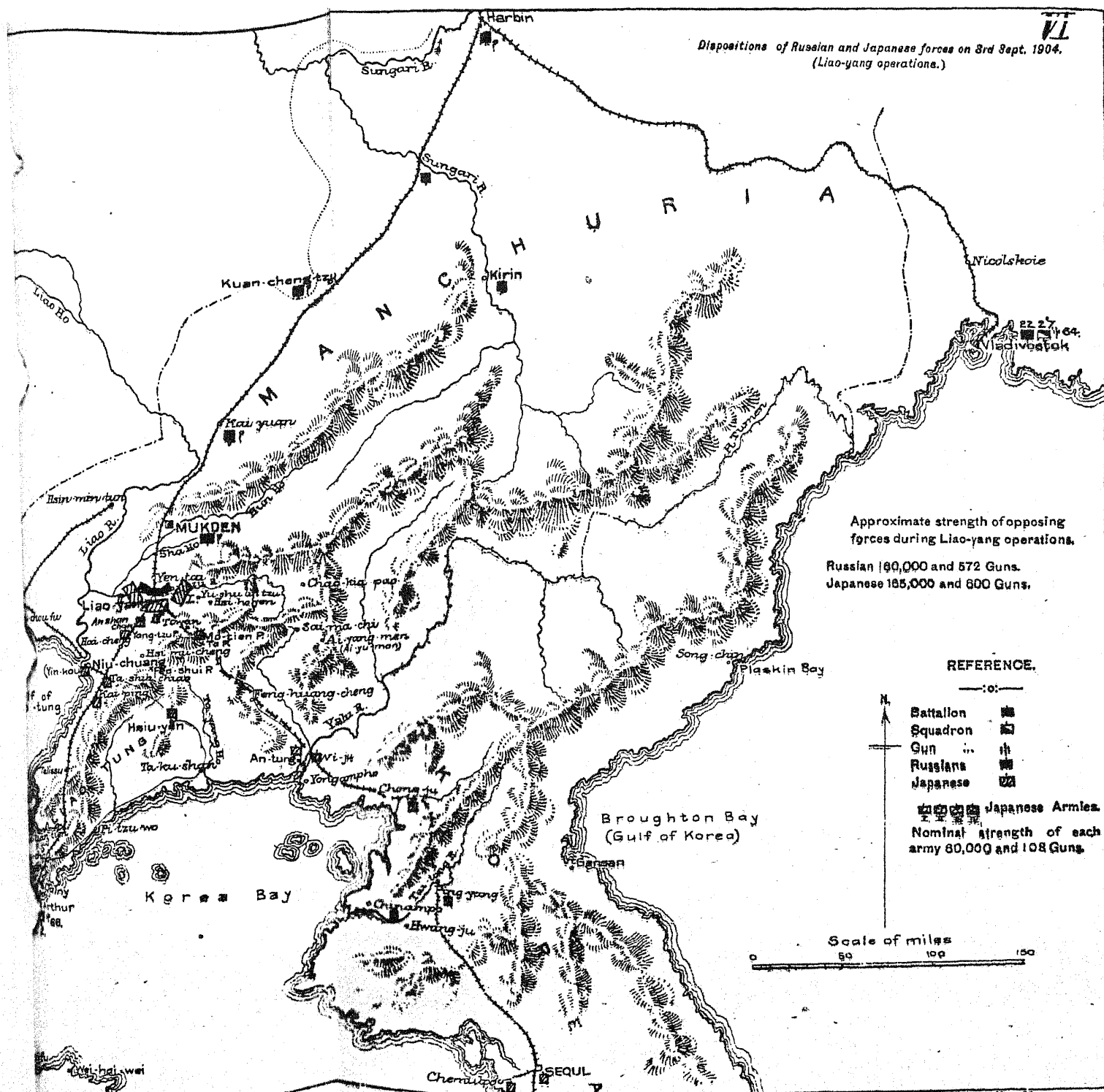
REFERENCE.

- 10: —
- Battalion ... [Symbol]
- Squadron ... [Symbol]
- Gun ... [Symbol]
- Russians ... [Symbol]
- Japanese ... [Symbol]
- [Symbol] Japanese Armies.
I II III IV
- Nominal strength of each army 80,000 and 108 Guns.





Dispositions of Russian and Japanese forces on 3rd Sept. 1904.
(Liao-yang operations.)



Approximate strength of opposing forces during Liao-yang operations.
Russian 60,000 and 572 Guns.
Japanese 185,000 and 600 Guns.

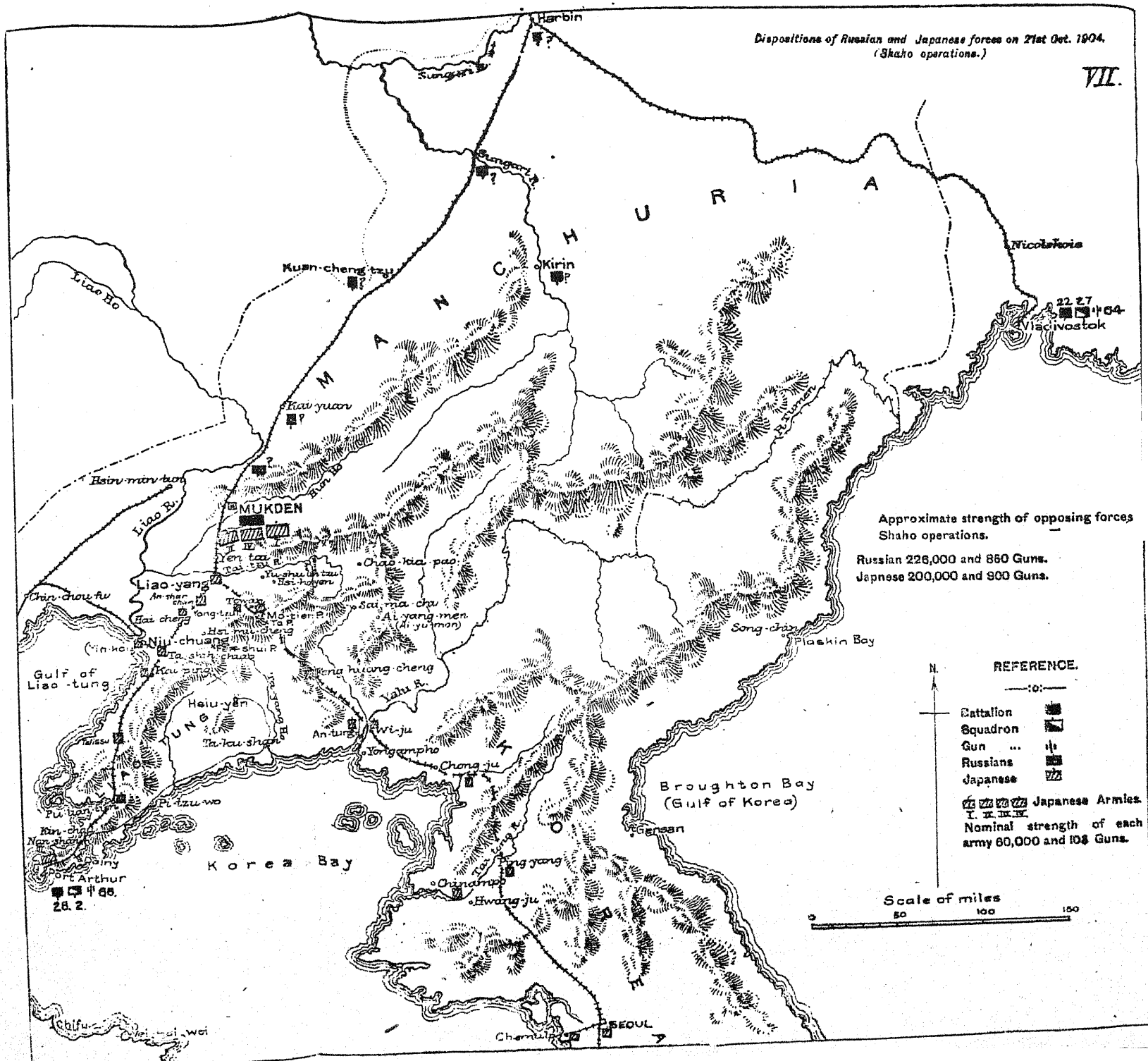
REFERENCE.

- 10 —
- N. ↑
- Battalion [Symbol]
 - Squadron [Symbol]
 - Gun [Symbol]
 - Russians [Symbol]
 - Japanese [Symbol]
- Japanese Armies.
Nominal strength of each army 80,000 and 108 Guns.

Scale of miles
0 50 100 150

Dispositions of Russian and Japanese forces on 21st Oct. 1904.
(Shaho operations.)

VII.



VI.

DISPOSITIONS OF RUSSIAN AND JAPANESE
TROOPS ON 3RD SEPTEMBER 1904.

(BATTLE OF LIAOYANG).

Russian.—*Ussuri (Vladivostok)*—

Same as before.

Port Arthur—

Same as before.

Liaoyang—

160,000 men and 572 guns.

Mukden—

Unknown.

Japanese.—*1st Army*, north of Liaoyang.*4th Army*, south of Liaoyang.*2nd Army*, west of Liaoyang.*3rd Army*, in front of Port Arthur.

VII.

DISPOSITIONS OF RUSSIAN AND JAPANESE
FORCES AFTER SHAHO OPERATIONS,
OCTOBER 21ST.*Russian.*—*Ussuri (Vladivostok)*—

Same as before.

Port Arthur—

Same as before.

192 DISPOSITION OF RUSSIAN AND JAPANESE FORCES
AFTER SHAHO OPERATIONS, OCTOBER 21ST.

On north bank of Shaho—

226,000 men and 850 guns.

At Mukden and other places to north—

Same as before.

Japanese.—

1st Japanese Army on right.

4th " " in centre.

2nd " " on left.

Port Arthur—

3rd Japanese army facing south.

"CAN CAVALRY CHARGE UNBROKEN INFANTRY?"

(A REPLY.)

BY CAPTAIN A. I. R. GLASFURD, 97TH DECCAN INFANTRY.

In an interesting article under the above heading, which appeared in the Journal of the United Service Institution of India for last October, we have again had brought before us one of the most important questions of military art of the present day—a question that is still awaiting an answer, having gained no elucidation as yet from recent events in the Far East, and for the settling of which soldiers of all nations are still looking to the next waging of civilized warfare—the question of the limitations imposed on the use of Cavalry by modern weapons of precision.

Perhaps the most engrossing aspect of this large subject is that which concerns itself in particular with the action of Cavalry *versus* Infantry; and in the article under reference we find, ready marshalled in order, an imposing array of argument—some theoretical and speculative, some historical and practical—all of which the author leads confidently forward in support of his strong objection to the dictum that "it is not possible for Cavalry to act effectively against unbroken Infantry".

It is not the intention of the present writer to tackle in detail each historical instance which has been advanced in the paper in question, to dissect the various circumstances environing each case, and to suggest reasons for the success of the Cavalry or the failure of the Infantry on this or that particular occasion. It is at present sufficient to note the fact that, whatever may have been the particular reasons or causes of success or failure, Cavalry throughout history *have* successfully charged Infantry which in the sense of not being in a state of rout has certainly been 'unbroken'; while in some instances it has dealt telling blows against foot-soldiers who, judging from their *morale* and training and armament as well as from the circumstances of the moment, might confidently have been expected to roll it back with crushing loss.

The question of the limits imposed by modern rifle fire on

Cavalry that seeks to employ shock tactics being still largely a matter of speculation, students of military art are more or less entitled to their own opinion regarding it. But since history shows that all advances in musketry power have been automatically compensated for by tactical change and that the predictions of those extremists who foretold the helplessness of Cavalry against each successive improvement in small arms have hitherto always proved misleading, it is clear that great caution is necessary in forming that opinion or in entertaining fixed ideas concerning the effect of rifle fire of today on charging Cavalry, and that the tendency of human nature to exaggerate the power of modern weapons, unmindful of the human factor behind them, should be kept in mind and avoided.

So much for the historical and practical side of the question, which has been so usefully and lucidly summarized and brought to our notice, and most of which stands incontrovertible. But when we turn to the other view—that of mere speculation and theory—we are confronted with matters which invite considerable criticism. In this connection be it understood that the following remarks are neither those of an Infantry officer who feels constrained to take up the cudgels on behalf of his own particular arm, nor a captious picking to pieces of the valuable paper under discussion. They are merely the thoughts and queries of the ordinary seeker of knowledge, set down as they occur, whether they happen to be in accord or discord with the various postulates that prompt them.

One of the first questions that occur to one on reading "Can Cavalry charge unbroken Infantry?" is—*What is unbroken Infantry?*

To search the realms of military pedantry for a sealed-pattern definition of 'unbroken Infantry' does not seem likely to help us here. We must therefore fall back on common-sense. Is 'unbroken Infantry' Infantry into whose composition almost every element of strain has entered until the whole is at breaking point—though outwardly and visibly still sound? Or, on the other hand, is it Infantry which is composed of veterans hardened by campaigning, confident of its power, fresh, and in the pink of condition and efficiency from every point of view? Between these extremes lies a vast scale of variation. Can it therefore be positively laid down what 'unbroken Infantry' is? And, if such were

possibly the case, would it not be dangerous to build on such an arbitrary rule?

Would not therefore a better title for the paper before us be—"Can Cavalry charge against effective modern rifle fire?"

The writer of "Can Cavalry charge unbroken Infantry?" compares the French *Chassepot* not unfavourably with the British Martini-Henry rifle, in order to prove to us that the conditions under which battles were fought in 1871 have not so radically altered as to afford no indications of tactical methods of the future. Assuming from his length of service that he is well acquainted with that reliable old rifle the '577—'450 Martini-Henry, has he, on the other hand, ever fired a *Chassepot*, or seen the flimsy little paper bag—its so-called cartridge, or experienced the results of a few comparatively rapidly fired rounds from even an unheated and little-fouled *Chassepot* barrel? If not, an insight may be obtained into these matters by referring to either the French or the German official accounts of the Franco-German War—or to any comprehensive Treatise on the history of small arms and ammunition.

Again, it is contended that—"modern weapons and tactics have in reality made the task of Cavalry (in charging Infantry) no harder than it was 200 years ago; whereas a successful charge now-a-days will have a far greater effect on the issue of the battle than was usually the case in the past".

But is not war waged over much more extended terrain now-a-days?—the direct result of modern rifle fire—and have the physical powers of man and horse kept pace with this increase of extension?

Is Cavalry able as a rule to deliver its attack from as short a distance as of yore, pouncing out from behind cover within such reasonably easy reach of its objective with horse and man fresh and fit to deliver the greatest possible shock at the greatest possible speed?

Is it not likely that the increased use of Cavalry in reconnoitring and screening over a vastly enlarged area will result in loss of power for the actual charge?

Does not the modern smokeless small-bore rifle make it as much harder than formerly for Cavalry to withdraw after an unsuccessful charge as to make good its usually long advance to the attack?

And as for the greater effect of a Cavalry charge now-a-days, does not the long and elastic extent of the modern line-of-battle, render its various portions less liable to be affected by blows delivered along its front—blows which in many cases cannot even be seen or heard of?

On the other hand, will the tactical sphere be as great in the future of civilized warfare as it became in South Africa? South African methods, though suited to their particular purpose, have been acknowledged as very misleading, away from it, being to an abnormal extent elusive and evasive; while, as expressed in the history of that campaign compiled by the German General Staff, great reluctance was displayed after a certain period, to the pushing home of attacks regardless of loss. The result of this was the inception of 'Boer tactics'—or the act of the mere hunter and *shikari* as opposed to that of the soldier pure and simple; and these tactics in their turn led to the spreading out of our forces over what now appears to be an abnormally extended front.

The author of "Can Cavalry charge unbroke Infantry?" is not alone in thinking that the effect of rifle fire is often greatly overestimated, but it seems that his argument in this direction goes a little too far and rapidly ahead of his premises. He informs us that Frederick the Great's Infantry could deliver fire at the rate of 13 shots *per minute per yard* of front, and, although he does allow that accuracy of fire has now-a-days increased, he then proceeds to remark that the magazine rifle has not been able to exceed this rate—that is to say, he puts the rate of fire of Frederick's Infantry gaspipe and that of the modern magazine rifle on a par. To argue that Frederick's *line* of Infantry three-deep could deliver a fire equal in rate to that of a firing *line* of modern British Infantry is wide of the mark; for, leaving out the question of the interesting and complex drill necessary for Frederick's fire-effect, and the confusion into which it was so liable to be thrown by a few casualties—besides the physical difficulties of reloading the muzzle loading smoothbore—is it not possible for modern Infantry to receive a Cavalry charge by putting in their supports and local reserves and thus to obtain, in an emergency, even a triple tier of fire—lying, kneeling, and standing—thus multiplying their rate of fire by 3? Be it noted that in such a case, when the position is one liable to be attacked by Cavalry, the defence would be as strong as

suggested by *Infantry training*, paragraph 246 (2), and *not* according to *Combined training*, footnote to page 39.

Again we are informed that—"in Frederick's time the musket was an 8-bore, and fired 14 oz. of powder. A spherical 8-bore bullet would drop a man or a horse on the spot, whereas the modern small-bore bullet has so little stopping power that we dare not even rely on it to check a charge of savages. Of what use then would it be to stop Cavalry charging home?"

Now the only remark we dare trust ourselves to make regarding the above version of musketry in Frederick's time is—"There were giants in those days!"

Fourteen ounces of powder! Practically the ordinary saluting or blank charge for field artillery! And enough to load seventy-three 12-bore cartridges with 3 drams of black! Imagination boggles at the thought of the explosion of such a charge in a shoulder gun, and gives rise to distressing mental visions of the rigours of Frederick's Musketry instructions, mingled with commiseration for the unhappy recruit of that time, and, later, enlightenment as to at least one reason why they fought in lines three-deep! Verily does our little '303 seem a futile weapon after this! Even fourteen *drams*—should 'oz' really be a misprint—is considerably in excess of the charge used by sportsmen for their heaviest 8-bore rifles; and the strength of black gunpowder has not varied much since its earliest days.

But these are trifles. What the author would have us take for granted is the utterly non-'stopping' character of the solid nickel-covered military bullet. But let us consider this assumption a little more closely. Is it true that the modern small-bore military bullet is such a poor 'stopper' as is made out? That it is, comparatively speaking, a 'humane' projectile is true enough. We have confirmation of this from Field Hospitals as well as from people who are fond of collecting stories of marvellous escapes in cases when men have been wounded by these bullets. We have heard of numerous cases—more's the pity of the Geneva Convention here—of its failure to check the rush of savages; or of its inability to knock down an infuriated wild beast. But what bearing has all this on the subject in hand—the effect of these projectiles on charging Cavalry? Are we to understand our own Cavalry or that of our enemies as 'being fanatical savages, or desperate dangerous wild beasts, which must be 'stopped'?

on the instant, and that at very close quarters? Have modern Cavalry the characteristics or even the vitality of the furious brute—human or animal? And is it likely that it will charge from such close quarters?

The maddened brute, of whatever genus he may be, must be stopped at once, and that nearly always at the closest quarters; and it is true that the small-bore military projectile—not possessing sufficient knocking-down power—is not an ideal means to such an end. But a fairly well-placed bullet of this type will very soon exert the necessary disabling or fatal effect, usually within $\frac{1}{4}$ minute—or, in other words, while the very fastest Cavalry are covering about 250 yards—while, in a fair percentage of cases, bone will be struck and man or horse brought down much quicker than this, if not actually at once.

It is perhaps difficult to collect reliable information on the subject of the effect of the small-bore military bullet on charging Cavalry; but many of those who have done much big game shooting know well that the larger the animal the greater the effect of the modern small-bore bullet. It may here be objected that the projectiles used by sportsmen are of the expansive type—but the present writer can vouch for the fact that the solid nickel—or steel-covered-bullet is no mean performer in this connection; and on a great many occasions, when not in possession of sporting ammunition for the '303 rifle, he has found the solid bullet quite effective, proving beyond a doubt that it is by no means so poor a killer as theorists would have one believe. And it has this advantage over the old fashioned musket ball—so unaccountably brought to the front in the paper under review—that its great penetration will rake a horse fore and aft, often finding bone and vitals in its further passage should it have failed to strike them in its earlier course. Many of the severer wounds inflicted by solid bullets, which the writer has examined, have presented all the features of the work of the expansive projectile. Those who have shared such experience will agree that it is a great mistake to underrate the disabling effect of the small-bore military bullet, especially on the larger animals. The supposition therefore that it will not stop charging Cavalry appears extremely doubtful.

Next we are asked to consider an imaginary action, in which seven or eight miles of front are held by an entrenched force—"The attacking Infantry have come within effective

range (say 1,300 yards) their artillery, firing over their heads, is deluging the position with shrapnel. The defender's firing line has been reinforced with supports and local reserves, till the front is held by one man per yard. Nerves are strained to the utmost, the excitement is intense. Suddenly, from behind a fold in the ground, about 1,000 yards away, a line of the enemy's Cavalry, ten or twelve Squadrons, is seen to be galloping straight upon the position; unless stopped they will reach it in two minutes! There is no time to adjust sights, there are no friendly Cavalry to oppose them with, as they have all been converted into Mounted Infantry—the attacking Infantry are now advancing behind, and in support of their Cavalry, will the defenders be able to wipe out the Cavalry before they charge home?"

In this our imagination is somewhat taxed; and we think that the author has assumed rather too many elements of strain in the 'unbroken' Infantry which he proposes to charge.

Yet let us, taking it so, look into this also.

The defenders are supposed to be completely under head-cover, firing through loopholes "of the latest and most improved pattern"—the attacking Infantry is 1,300 yards away. Are we really expected to take this attacking Infantry fire as 'effective'?

The attacking guns are "deluging the position with shrapnel"—Is this shrapnel, even allowing that it is applied by high-angle fire, to be taken as seriously affecting the 'completely covered' Infantry of the defence?

And why, while the attacking Infantry is still 1,300 yards distant should the defenders have brought up their supports and local reserves?

Why also, if the nature of the ground in their front permits of Cavalry charging home, is it taken for granted that the defenders have only arranged for a total defensive strength of one rifle *per* yard of front?

Further, will not the supporting guns and Infantry have to cease fire an appreciable time before their rapidly-moving Cavalry nears the defender's line; and will not the defenders then be able to temporarily forsake their cramping loopholes, rush up their supports, local reserves, or even in some cases a portion of the general reserve, and meet the Charging Cavalry on better terms?

Is it not also possible for at least some of the adjacent but unthreatened portions of the defensive line, right and left, to concentrate their fire on the approaching Cavalry? And, since the attackers are equipped with all arms, why has the defence no artillery or machine guns—and might it not take the Cavalry at a disadvantage also with the *fire* of its despised Mounted Infantry?

Again in his suggested musketry practice—based on the tactics of Infantry *versus* charging Cavalry—why should the author presuppose that the defending Infantry will necessarily have to remain at their loopholes when the Cavalry targets simulate a charge home?—or assume that firing "must cease" when the Infantry fixes bayonets, instead of its rate being momentarily halved or checked? He also appears to have forgotten that the "complete 2nd or supporting line" of Cavalry would come in for a good many of those despised flat trajectory bullets which have missed or even already penetrated and disabled units of the 1st line.

As a matter of fact it is easily understood and confirmed by experiment that the proper way for good and well trained Infantry to deal with charging Cavalry, is not to open fire at 1,000 yards or over as they will only unsteady themselves by seeing the Cavalry come on practically unharmed by such long range fire, but to fix bayonets, put up the "fixed sight," wait, and open a rapid fire "Magazine independent" when the Cavalry come within 600 yards.

As for the quotation from the writings of the author of "*Cavalry: its past and future*," such authoritative criticism has already dealt with its vagaries that we are perforce silent.

This closes the discussion of the arguments in support of the contentions of the writer of "Can Cavalry charge unbroken Infantry?"—except that we cannot surely agree that Cavalry charges will be no more costly now than in former times. The magazine rifle with its rapidity of fire, lightness, ease of manipulation, small recoil, accuracy, long point-blank range, and absence of smoke, seems bound to make the charge and the extrication of even successful Cavalry far more costly than of yore. Man and horse tire; the rifle never: and even when fired by shaky and fatigued hands its bullet, whenever it strikes, retains its full value. Given equal physical weariness in each case, it cannot be denied that it is easier to shoot man or horse at a few yards range than to

ride at and hurt an armed foot-soldier with cold steel.

We now turn back to the historical side of the arguments before us.

In considering these it is not understood why some of the events of the Boer War are so frequently utilized as proof of the author's contentions while in other places experience formed on them is poohpoohed as utterly misleading and worthless. Surely it would be better and more logical to give them an equal value, whether they be for or against our argument. At the best they prove very little, for the reasons already given; and the instances produced in order to convince us are surely specially devoid of value.

The Boers were at no time of their wonderful struggle trained Infantry soldiers in the strict sense of the word. They even had no bayonets. They fought to kill and live—seldom to kill and die. And usually when seriously threatened they, wisely enough in their peculiar position, ran away; to return and fight another day under more favourable auspices. Besides this, our Cavalry in South Africa was so handicapped by the enormous extent of country they had to cover, by difficulties of keeping their imported horses fit amid strange surroundings and food, and in the peculiar difficulty of dealing with so elusive an enemy on his own ground, that grand Cavalry tactics were almost impossible. When these tactics did come off their effect was almost entirely moral; the Boers promptly disappeared; and no experience was gained as a guide to what Cavalry might expect of regular Infantry.

In the concluding historical instance—that of French's big Cavalry charge at Klip Drift—we find according to the account of the German General Staff, that is to say—900 Boers with 3 guns acting on the defensive. Against them are brought no less than nine batteries of artillery and two Naval 12 prs.—a total of over fifty guns; they are then threatened by the attack of an entire Infantry Division; and finally charged by a Cavalry Division—6,000 horse!

The Boers leave hurriedly—small blame to them; indeed all honour to them for staying even long enough to deliver that "very hot frontal and flanking fire" experienced by the charging Cavalry. Is this so-called "staggering success" produced in vindication of the falsity of the theory to which the paper before us takes such exception—"the impossibility for Cavalry to act effectively against unbroken Infantry"?—If it really is intended as such, and no other interpretation seems tenable, then those who so employ it must have a

vastly greater respect for Infantry fire than they would have us believe!

Yet what are all these theoretical discussions, and the settings of pens to paper!—'Prave' orts'; leisurely lucubrations; consumption of the midnight oil in strainings after the science that so often succumbs to a sharp eye, quick decision, or rude brute force.

What really remains after all is said and done is that although war continues a variable quantity, a game of luck and opportunity as well as one of skill and science, full of surprises, change, and the expected, and a destroyer of the best-based theories, the mainspring of its conduct is the human factor; and human nature being more than less a fixed quantity we must regulate our ideas accordingly.

We must therefore give theory—good servant but bad master—its proper place, remembering that even the best trained troops often forget their science and revert to the primitive instincts of mankind.

The tendency to overlook these matters has no doubt led to the present extreme views regarding the limitations of Cavalry in the face of modern rifle fire, for there is little, as yet, to actually prove that the extremists are as wrong in this instance as they have been in the past. At the same time a reaction has set in, aided no doubt to a certain extent by the history of the present struggle in the East, notwithstanding that this has hitherto been one almost entirely of Artillery and Infantry; and moderate views are already replacing those misleading conclusions to which the wholly 'one-war' enthusiasts so unwisely jumped.

Since it is unalterable that moral influences will continue to rule the vicissitudes of man's struggles with fellow man, it would be folly to imagine that the moral effect of a well-timed Cavalry attack will decline, although it seems probable that the power of modern small-arms will considerably restrict its opportunities of success and render the thoughtful Cavalry leader more cautious than in the past. Whether its opportunity be the result of terrain, weather, hampering distractions, lack of ammunition, or of other tactical, physical, or moral influences, occasions must arise in the future, as in the past, when Cavalry, employing shock tactics against Infantry, will repeat its historical successes; and these will vary in character and extent exactly in proportion as its opponents have considered or ignored its claim as a factor of the battlefield and provided or failed to provide *measures* to meet it.

A SCHEME FOR FACILITATING INTER-COMMUNICATION DURING ACTION.

BY LIEUTENANT R. D. ALEXANDER, 2-3RD GURKHA
RIFLES.

Under modern conditions all operations in the face of an enemy are carried out by troops in widely extended formations. These formations possess as it were a family likeness throughout. That is to say, they all consist of lines of men at various intervals and distances, each line following after and conforming its actions to those of the line immediately preceding it. The combined and harmonious action of these lines and of the units composing them is essential to success and to attain it a quick and accurate means of communication between them must be assured. For this purpose every unit possesses a body of trained signallers. Unfortunately the number of trained signallers especially in a native regiment is limited. The difficulty of training them is very great and it is hard to see how their number can be augmented under existing circumstances. Thus, when signallers have been allotted to the Commandant and British Officers (to say nothing of the Brigade Staff) there are none available for allotment to Native Officers. Native Officers in charge of detached companies and pickets are often far from the British Officer from whom they are taking orders. All orders and information have therefore to be sent by orderlies and much labour and loss of time is caused thereby. In hill country (in such country as that in which most of our fighting is likely to take place) this labour and loss of time is greatly increased. At effective ranges under heavy fire the orderlies would have the greatest difficulty in arriving at their destination at all.

If Native Officers and Non-Commissioned Officers were able to signal in semaphore no orderlies would be necessary.

Semaphore in English is for obvious reasons impossible. There only remains Semaphore in the vernacular. Semaphore would of necessity vary as the Regiments using it wrote in the Nagri or the Persian characters. There would therefore be two sets of semaphore signals (one for Nagri and one for

Persian) and this would lead to endless mistakes when corps using different sets were working together. For this reason semaphore in the vernacular may be considered inadvisable.

It would seem therefore that there are no means of communication other than by trained signallers or by hand.

The object of this scheme is to find some "*via media*" between these two methods. It is not claimed that the result arrived at is any thing but very rough, but a "Kutchra" road is very often better than no road at all.

Our field signals would seem intended to supply this want but they are seldom if ever used, because they are not in themselves sufficient. It is of very little use to signal back "enemy-in-force" when no particulars as to his whereabouts, composition or actions are supplied. But field signals could be made very useful if some additions were made to them.

If certain words of constant use on all field days are considered it will be found that they are only about twenty in number. Time after time orderlies are sent with messages which though containing essential information are almost the same in substance. If signals were invented for these words, almost any short message containing information could be sent.

These words are :—

Enemy's.	Cavalry.	Right flank.	Advancing.
Our.	Infantry.	Left flank.	Retiring.
	Artillery.	Centre.	Halted.
	Scouts.		
Jungle.	Road.	Village.	Report.
Cover.	No Road.	Sangar.	
No cover.	River.		

To these words should be added the sentence "written message sent" and the query "what news?" They are necessary for the following reasons.

"Written message sent" would show that the bare particulars already received were being amplified by important

details. Instead of a messenger suddenly appearing out of nowhere, his coming could be looked for and any orders necessitated by the detailed information could probably be in a measure foreseen by the outline received. That is to say a commander having such previous knowledge could keep with him until receipt of the message a body of troops which he might otherwise have despatched elsewhere and had to recall. The query "what news?" would be useful for calling up and would also do to signify "repeat". If signalled as an answer to a message it couldn't mean anything else.

If these words are added to our present field signals it will

An instance.

be seen that almost any simple message of information can be sent. An instance taken at random from an old field day report book goes to prove this assertion. A non-commissioned officer sent back the following message "enemy's right flank infantry in force our left flank scouts halted in jungle, enemy's left flanks scouts retiring, enemy's left flank in sangars."

Of course it is laid down that trained signallers must always accompany scouts, but as has been already stated their services are very often required in more important places. In this case there were no signallers. The scouts were about a mile ahead, but a deep valley lay between them and the nearest body of troops in rear. An orderly was sent, he ran down about seven hundred feet, climbed the other side and eventually found the officer he was in search of who had moved off after he was despatched. From first to last the message took about five and twenty minutes to deliver during which time the whole force had waited idle until certain news of the enemy's left flank should arrive. With the proposed system of signals this message would have been transmitted in five minutes with equal clearness. It would read "enemy's right flank; enemy-in-force infantry; our left flank scouts halted in jungle; enemy's left flank scouts retiring, enemy's left flank in sangars".

With the exception of the word "in" which it does not take a very great stretch of imagination to supply, the whole of this message could be signalled. Transmitted, from line to line it would read "Our right flank scouts report."

The chief use of the signals would be as a means of

Chief use of signals. communication between the various units of a battalion for the purpose

of conveying to native and non-commissioned officers, information not of vital importance which it is nevertheless necessary they should know.

The signals would resemble semaphore signals. That is they would be made with the rifles or the arms alone according to the distance between the receiving and transmitting parties. Flags are inadmissible. A man in the fighting line with a flag would at once become a conspicuous mark. Appended is a rough sketch of each signal with an explanation.

Before concluding let the disadvantages of this system be compared with the advantages.

Disadvantages.

The chief disadvantages appear to

be :—

- (1) The signals correspond to semaphore signals which are admittedly hard to decipher at any great distance.
- (2) There is a tendency to practise everything much or little in proportion to its practical usefulness at the time. This system would be of very limited use in the plains where the thickness of the air and the high standing crops limit the view.
- (3) The signals require a lot of practice as absolute accuracy is essential.
- (4) If the signals were not continuously practised in the plains during field days and manœuvres only chaos and loss of life would result on service in the hills.

Advantages.

The advantages of the system are :—

- (a) In the hills these signals could be read "as the crow flies" up to at least a thousand yards, thus saving an immense amount of labour and loss of time owing to the great distances which a man going down and up has to cover.
- (b) Every native and non-commissioned officer who saw the signal could read it and know at once all that there was to know. In these days when so much stress is laid on the individual action of the section leaders, it is of paramount importance that they should know at once any news about the enemy.
- (c) If British Corps learnt these signals a unicode would be established by which officers and non-commissioned officers could communicate direct

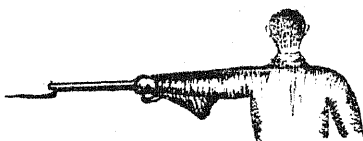
~ RIGHT FLANK ~

One Rifle horizontal in line with
Right shoulder full extent of Right Arm.



~ LEFT FLANK ~

One Rifle horizontal in line with Left
shoulder full extent of Left Arm.



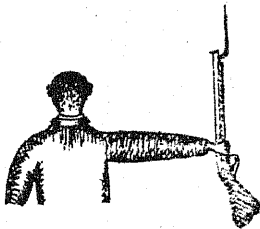
~ CENTRE ~

Two Rifles horizontal in line with
both shoulders full extent of both Arms.



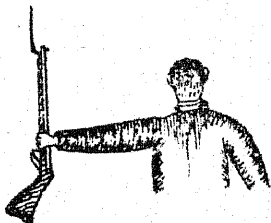
~ ADVANCING ~

Rifle full extent of Right Arm
held perpendicularly.
Hand in line with shoulder.



~ RETIRING. ~

Rifle held full extent of Left
Arm perpendicularly.
Hand in line with shoulder.



~ HALTED ~

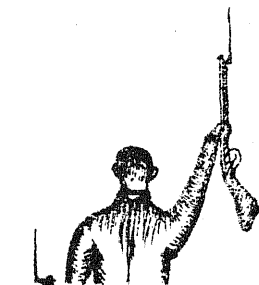
Two Rifles full extent of both
Arms held perpendicularly.
Hands in line with shoulders.





"ENEMY'S"

One Rifle held perpendicularly above Right shoulder full extent of Right Arm.



OUR

One Rifle held perpendicularly above Left shoulder full extent of Left Arm.



INFANTRY

One Rifle 45° upward from Right shoulder full extent of Right Arm.



CAVALRY

One Rifle 45° upward from Left shoulder full extent of Left Arm.



ARTILLERY

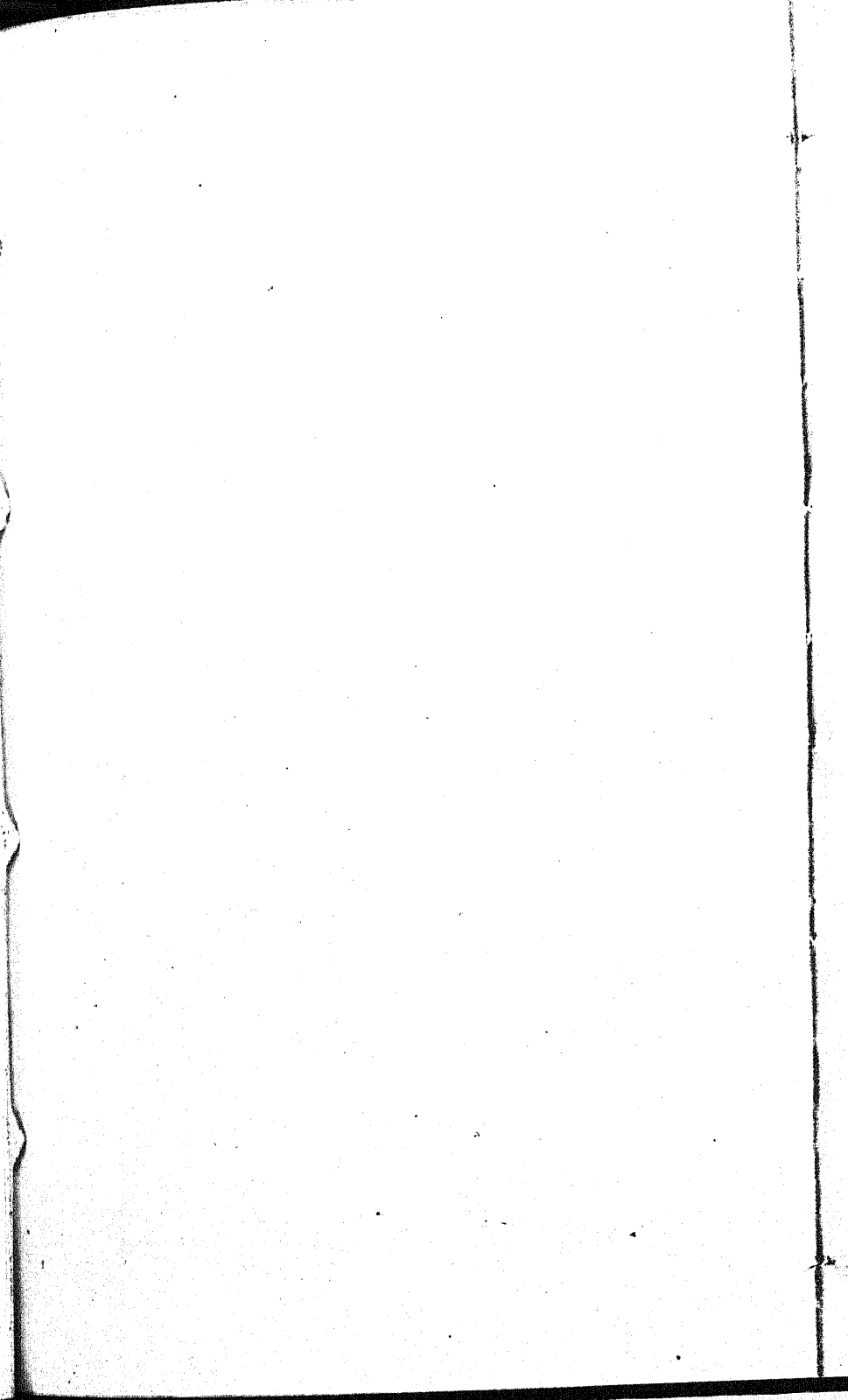
Two Rifles held perpendicularly above Right & Left shoulders full extent of Right and Left Arms.



SCOUTS

One Rifle perpendicularly above Left shoulder, one horizontal in line with Right shoulder full extent of both Arms.





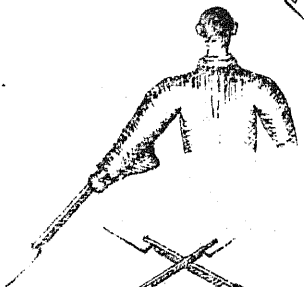
~JUNGLE~

Rifle full extent of Right Arm
held 45° downwards.



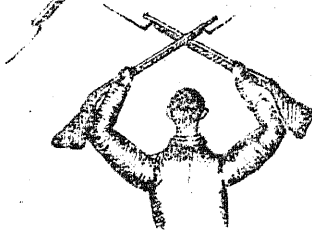
~ROAD~

Rifle full extent of Left Arm
held 45° downwards.



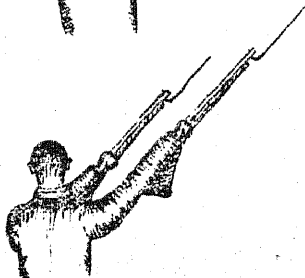
~NO ROAD~

Rifles crossed above head.



~COVER~

Both Rifles 45° towards Right
side.



~NO COVER~

Both Rifles 45° towards Left side.



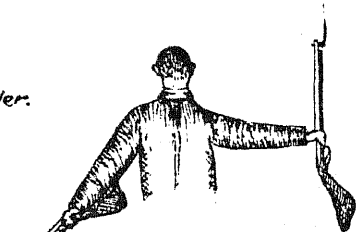
~VILLAGE~

One Rifle 45° upwards from Right shoulder.
One Rifle 45° downwards from Left shoulder.



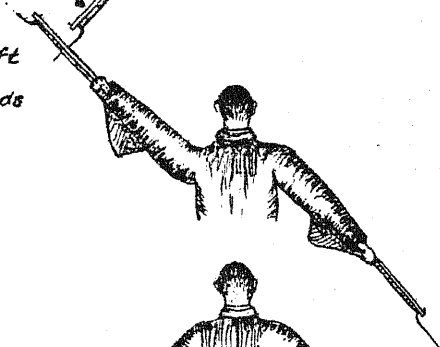
~ RIVER ~

One Rifle perpendicular full extent
of Right Arm; hand in line with shoulder.
Left Rifle 45° downwards.



~ SANGAR ~

One Rifle 45° upwards over Left
shoulder. One Rifle 45° downwards
below Right shoulder.



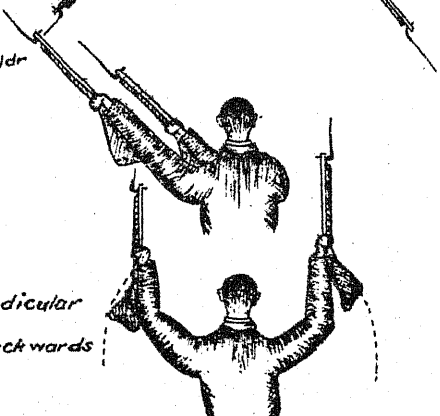
~ REPORT ~

Both Rifles 45° downwards.



~ WRITTEN MESSAGE SENT ~

Both Rifles 45° upwards over shoulder

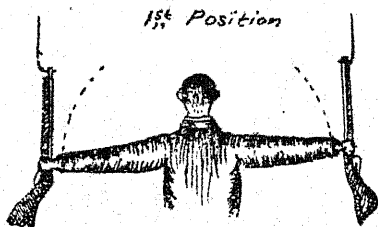


~ WHAT NEWS ~

Both Rifles moved from perpendicular
to horizontal as long as possible backwards
and forwards.



1st Position



2nd Position

N.B. - IN ALL CASES THE SENDER AND
RECEIVER FACE TOWARDS THE ENEMY.

(2) ALL MESSAGES TO BE REPEATED
AFTER RECEIPT.

with native officers and non-commissioned officers in charge of detached companies, posts or pickets. A knowledge of vernacular on the one side and of English on the other would be immaterial.

- (d) The signals are simple and easily mastered. If a paper was supplied to every native and non-commissioned officer on which the various signals were shewn, mistakes would soon become unknown.
- (e) A message which is now sent through a thin line of signal stations and thence laboriously by hand would go with almost equal speed spreading right and left as it went.

Of the disadvantages No. 1 is the only serious one. In the hills it should be possible to see these signals quite clearly at a thousand yards. With binoculars against a suitable back ground they could be distinguished at half as far again.

No. 2 vanishes when it is seen that thick atmosphere and high crops would only tend to make the system more practised owing to more connecting files being necessary. It is admitted that this system has little or nothing to commend it in the plains where a mounted or even a dismounted orderly could bring a message quicker and with hardly less trouble. The real question is should or should not troops in India even quartered in the plains be trained as far as possible for service in mountainous country. Nos. 3 and 4 are answered very easily. If such a system is worth consideration at all it is worth learning well.

Lastly with regard to the actual working of these signals. Let it be assumed that every Native and non-commissioned officer has a perfect knowledge of these signals. They cannot, especially the former, be expected to neglect their many duties to turn themselves into signalling machines.

Every native officer should be accompanied by two orderlies specially trained to read and write down the messages as in ordinary signalling. In every section there should be two men whose special duty it is to look out for, take down and

Working of Signals.

transmit any message. Thus while the responsibility of always being on the watch for signals need not be lifted off their shoulders, Native and non-commissioned officers would be as free as ever to give all their energies and abilities to the work they have in hand.

ROUTE-MARCHING.

BY CAPTAIN L. H. BALDWIN, 8TH GURKHA RIFLES.

Mobility is one of the most essential qualifications of modern armies, and no body of troops can be described as mobile unless they are capable of marching considerable distances with their complete field service equipment for several days in succession. We need not emphasise the vital importance of good marching by quotations from Napoleon and numerous generals of both ancient and modern times. The fact is well known and universally recognised, and the developments of scientific warfare in our own times have increased rather than diminished the importance of sustained marching power on the parts of all arms of the service, and especially of infantry to which the remarks following are intended to apply. Not only have troops to march more or less considerable distances before coming in contact with the enemy, but even when in actual contact the tendency of modern battles is to fight on an enormously extended front while the issue of the battle remains undecided for days where in former times the same number of hours would have produced decisive results. The battle or rather series of actions round Liaoyang in the present Russo-Japanese War is a sufficient illustration of this, and the moral of it is that good marching powers are more than ever necessary even in the immediate presence of the enemy. Concentration of a numerically superior force at the right moment and in the right place remains as ever the main principle of tactics, and this being so it stands to reason that now-a-days with the immense extent of ground taken up by a defensive position, the advantage of superior marching powers must tell enormously in favour of troops who are thereby enabled to concentrate at a critical moment opposite some weak spot in the enemy's line before the latter has time to bring up sufficient troops to counteract this movement. The importance of good marching being granted, the question remaining to be decided is how to secure and develop the marching capacity of troops during peace time. The obvious answer may seem to be—practice route marching as frequently as possible. The drill books tell us that much, and also give many useful hints regarding marches, what pace to go at, what halts to make, what formations should be adopted, and numerous other details, but there is no attempt at laying down any systematic

method of training infantry to march, possibly because it is thought best to leave the matter to individual commanding officers to carry out in the way they think best. The result is that in the majority of cases route-marching is looked upon as an unmitigated bore, a necessary evil which has to be got through a certain number of times at some convenient time of the year when time can be spared from musketry and drill parades. The usual procedure is to select one or two months during the cold weather, and during these months a route-march is ordered once or twice a week instead of the ordinary parade. The troops parade an hour or two earlier than usual and proceed to march along some well known road for five, six, or more miles, and then march back again. As an unpleasant form of walking exercise this kind of thing may have its merits, but what training does it afford, what interest is there in it, how can one possibly gauge the marching capacity of troops by it?

We venture to state that the training afforded is unappreciable, the interest in it is nil, and that it has no value whatever as a means of gauging marching capacity.

Is there then no system which could be devised to alter all this, and to give route-marching its proper value and importance as a factor in military training? Most certainly there is, and that too without making a fad of marching, and cultivating it at the expense, of drill, musketry, and other important details in a soldier's training.

The first thing to do is to fix a standard in peace time as to what should be required of infantry in the way of covering distances by route-marching for several days in succession. There may be considerable difference of opinion as to what this standard should be, but let us assume for our purpose at present that on good roads in cold, dry weather infantry should be required to march from 20 to 30 miles a day for three successive days. Having fixed this as the standard requirement, all that remains is to devise a method which will ensure that every individual soldier in a battalion is annually capable of fulfilling this requirement. For this purpose the following system might be adopted, which for the sake of brevity and clearness we will put in the form of orders.

Annual route marching.

1. Route-marching for seven days in succession will be carried out annually by all ranks with the exception of officers of over 15 years' service who may ride at their option.

ROUTE MARCHING.

2. The practice will be carried out during the cold weather by half battalions or double companies at the discretion of the Officer Commanding.

3. In normally level country with good roads the distances to be marched on seven successive days will be as follows:—

			Miles.	
1st day	10	} Halts as laid down in "combined training."
2nd "	...	...	14
3rd "	...	...	16
4th "	18	} In addition to the ordinary halts, a halt of from one to two hours when half the march is completed.
5th "	...	...	20
6th "	...	...	25
7th "	...	...	30
Total			133	

N.B.—At stations where roads are bad, or in hilly country the scale laid down may be modified according to circumstances with the sanction of the General Officer Commanding, but only under very exceptional circumstances will the total distance to be marched in 7 days be less than 100 miles.

4. To ensure that every man completes the distances laid down particular care will be taken to keep a list of all men who fall out during each day's march. If a man falls out on one day it will not prevent him completing his course, but the respective distances which he failed to complete with his company must be carried out by him at some future time. For instance, a man may fall out on the second and fourth day, distances 14 and 18 miles respectively. The distances will in each case be marked against his name, and he will have to repeat these distances after the regular course is over on two successive days. Similarly should a man break down altogether on the second, third, or any subsequent day of his course, his name will be noted, and he will complete the course at some future period.

5. All men who fall out will be described as marching casualties, and all distances which they failed to complete satisfactorily will be repeated by them. The repetition marches will be continued until all the distances laid down have been satisfactorily completed.

6. No man who fails to complete his course will be granted leave or any other privileges.

7. To make the march as interesting and instructive as possible it should be arranged whenever practicable in the

form of a circular tour commencing and ending at the station the troops start from. As it may be difficult to arrange to complete exactly the total distance when returning to the original starting point on the 7th day, an extra day will be allowed for a short march into the station.

8. The proper proportion of the "First line of Transport" should accompany the Half Battalion or Double Company. Tents and the actual amount of kit necessary for a week in camp should also be taken. Only mule transport should be allowed.

9. Care should be taken to save as much fatigue as possible on arrival in camp, and that men may cook and eat their food as comfortably and with as little delay as circumstances will permit.

10. There should be no advance or flank guards. Men should be taught that when route-marching they are supposed to be a portion of the main body of a column and that their advance is covered by mounted and other troops. A few men for baggage and rear guard will be necessary.

The above scheme is only intended as a rough summary of the lines on which a practical method might be devised of securing real efficiency among infantry in one of the most important branches of their training. It may be thought that a week's training during the year is much too little, but it must be remembered that all there is actually to learn about marching may be found in "combined training", and that its practical application may be acquired in two or three days. The important point is not whether troops are well acquainted with the rules and regulations concerning marches, but whether they are capable at a pinch of marching long distances on several successive days without undue fatigue or exhaustion. If the system advocated above were carried out, the annual weekly course suggested would be quite sufficient to secure the object aimed at. As the distances to be marched during the last four days are pretty considerable, the probability is that a very large percentage of men would have to repeat some of the marches more than once, so that all men not up to the mark would just get the amount of training they are in need of. The further advantages of a short course are that all ranks will be keener and more interested in performing a set task, so to speak rather than one which is prolonged and spread over intermittent periods. Nothing deadens the interest and therefore the value of any training more than to make a compulsory fad of it. It is

all very well for enthusiasts to maintain that you can never be too good at anything, but when this truism is construed to mean that men are to be constantly harried and worried to conform to a standard which is beyond the capacity of the majority, the result in common parlance is that they get "fed up," a state of things which conduces to the reverse of efficiency. Again, physical training and field manoeuvres afford incidentally a certain amount of training in route-marching, besides which there are musketry, battalion drills, skirmishing, etc., none of which the soldier can afford to neglect, so that all these are additional reasons for not making the route-marching course longer than is absolutely necessary.

The reason that advance and flank guards are not recommended when troops are being practised in route-marching is that they tend to delay the march, and prevent the regulation pace being kept up. Moreover, as they usually advance in skirmishing order, and over rougher ground than the troops marching on the road they have naturally to undergo greater physical exertion, and as the object of systematic route-marching is to test marching power on roads all the men should be on the same footing, and it would therefore be unfair for a proportion of men to be put to the severer test of marching over broken ground on each side of the road. If all ranks are given to understand that they represent a portion of the main body of a column, and not an isolated force marching through an enemy's country, they may safely be trusted to have enough intelligence to appreciate the difference. However, if considered necessary, there would be no harm in having a small advanced guard provided it keeps to the road.

To sum up, the advantages of the scheme outlined would be as follows:—

1. A uniform and systematic method of training troops in marching.
2. A method which will make marching interesting and inst active.
3. A method which ensures that every individual will do his utmost to come up to the required standard, as the more averse a man is to marching the more eager will he be to complete his course, seeing that he gains nothing by falling out, and on the contrary is put to considerably greater trouble.

4. Last, but not least, a valuable method of gauging the marching capacity of different regiments would be gained by keeping a record of all men who had gone through the course. This record would show annually how many men had completed the course the first time, how many had repeated certain distances once, twice, or more times. The whole could be worked out in percentages and averages, and if certain marks were allotted for each distance, the marks diminishing in value with each repetition of the distance, the total marks obtained by each regiment worked out in percentages would give its marching power in numerical terms, thus affording an easy and exact method of comparing regiments as regards their marching. Moreover by this means, men might as in musketry be classified as 1st class, 2nd class, or 3rd class marchers, all which would contribute towards making route-marching a more interesting and useful training than it is at present.
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MILITARY SNOWSHOEING IN SWEDEN.

BY LIEUTENANT-COLONEL THE HON'BLE E. NOEL.

The snowshoes used in Scandinavia are quite different from the Canadian pattern. They are of wood, about six to seven feet long, curling up in front, and just wide enough to hold the foot, to which they are attached by means of straps.

Walking, or sliding, on these snowshoes has recently been taken up as a new kind of sport, and they are becoming well known under their Norwegian name of "*ski*" (pronounced "shee"): in Swedish the name is *skid* or *skida* (sheeda).

Switzerland is more readily accessible than Scandinavia, and many English people resort thither every winter to enjoy this sport in the lower Alpine regions; many *skis* are now manufactured in that country, where however their price is much higher than in Sweden.

Races and other competitions have also been started in Switzerland, and a great Northern Meeting for winter sports was inaugurated in 1901, to take place every two years alternately at Stockholm and Christiania. Minor meetings are held every winter at various places in Sweden.

Snowshoeing is however not merely a sport: it is further of practical utility as a means of traversing a snow clad country, and so we find that military snowshoeing has received considerable attention.

We have heard a good deal in late years about the necessity of increased mobility for infantry. Snow is a serious obstacle to troops of all arms, and it is obvious that in a snow covered country the mobility of infantry could be readily increased by "mounting" them on snowshoes, and we are not surprised to find this first attempted in those countries where snow is most prevalent.

There is mention in history of "Snowshoemen" in the armies of the great Gustaf Adolf. In the next century six frontier snowshoe companies were raised in Norway, and troops on snowshoes took part in the wars between Norway and Sweden down to those of the early years of last century. During the long peace which has followed the union of these two countries, military snowshoeing was forgotten.

Our own army had some experience of snowshoes of another type in Canada, but this too passed away with the

withdrawal of the British garrison from the North American Colonies.

A more general revival of military snowshoeing has marked the opening years of the present century.

There are now men trained to work on snowshoes in the armies of Italy—among the Alpine troops—Austria, France and Germany.

The Indian army already holds the record in campaigning at high altitudes, and in the vast snowy regions on our Northern frontiers opportunity might be found for utilizing this new development of Mounted Infantry.

In Norway already in 1899 steps were taken to organize two light companies of scouts who move in summer on bicycles and in winter on snowshoes. One of these companies, last winter, did a three-weeks training as a snowshoe company, and in a small camp of exercise of the garrison of Christiania *all* the infantry wore snowshoes.

Snowshoeing has been lately encouraged in the army of Sweden also, and there is now a project for raising a cyclist-snowshoe scouting corps of 300 men in the VIth or most northern army-division of that country, the estimates for which will be laid before the Swedish Parliament in the present year.

The following is an account of a snowshoe expedition made by a party of the Norrland Dragoon Regiment in the hills of Jemtland at Easter 1904, and which appeared in the Annual for 1904-05 of the Swedish Snowshoeing Association.

Norrland is a general name for the whole northern half of Sweden: this regiment is stationed at Umea, a port on the Gulf of Bothnia. Jemtland is a province bordering on Norway: Storlien is the last Swedish station on the Stockholm-Trondhjem railway: Bräcke is the junction for the line leading to the far north: from Umea to Storlien is 606 kilometers.

Our expedition to Jemtland was at last to be realized. We longed to try some ground different from the plains about Umea over which we had sported ourselves for so many winters and to have some experience of a hilly country.

First as to the preparations, and outfit of the expedition.

The party consisted of 4 officers, 2 non-commissioned officers and 12 men, all volunteers. Many more had put their names down, but, owing to the difficulty of finding accommodation, the number had to be limited. When we consider that the men bore the whole expense themselves,

and that this exceeded a month's pay, we see how great was the interest taken in snowshoeing in the regiment.

This sport is not merely a pleasure, for it is now fully acknowledged in the highest military circles that Norrland cannot be defended in winter time without a good number of snowshoe troops, and it is especially important for the cavalry arm to have the very best snowshoemen for purposes of reconnaissance.

The expenses amounted to 63 cents (about $8\frac{1}{2}d.$) per man per day for food, and 2.60 crowns (2s. 11d.) for all other purposes.

The food varied from day to day and included, besides bread, biscuit, meat and vegetables, coffee, tea, chocolate, butter, milk, cheese, oatmeal, porridge and light ale.

Equipment.—Besides 'walking out' uniform for Sunday wear, we took great coat, fur coat, khaki coat, fur cap, gloves and mitts, thick woollen sweater, Sahlin boots with putties and spats, 4 pairs thick woollen socks, two changes of under-clothing, also backbag, messtin, knife, fork and spoon and 1 felt per man.

The *snowshoes* used were of 3 types—regimental (Sahlin), Telemark, and Lignell. The fastenings of 2 types—"military" and Huitfeld. 6 pairs of spare snowshoes were taken which proved more than enough.

The expedition with the railway journey was to last 10 days, and was to include a 3-days march to the Syl hills, with, if possible, an ascent of them.

At Bräcke we heard very discouraging accounts of the state of the snow. At Enafors we were told that it was all right on the hills. We passed through the last snow tunnel and the train steamed into Storlien.

We were greeted by the stationmaster, through whose kindness we were lodged in the excellent railway huts, and without whose help the trip would have been scarcely practicable.

We settled ourselves in two airy rooms, with fireplaces, iron bedsteads, and mattresses, all spick and span. Our food was prepared by the wife of a guard in whose neat little house we were to take our meals.

The hills about Storlien are varied and pleasant, and suitable for persons in all stages. The beginner can choose first the easy and later on the more difficult slopes according to his powers, while the advanced snowshoer can find a run to try his skill on the high fjells. Storlien is an excellent centre

for long and short trips on both the Jemtland and the Norwegian fjells.

Tuesday, March 29.—To Rensjösäter: 30 kilometers there and back. Breakfast at 6-30 A.M., start at 7-30. 6 degrees* of frost; strong wind favourable. We had engaged as guide a Norwegian, Gudorm, a pleasant and good tempered man, and an expert "skidder".† He had given up the Norwegian Telemark, and used only the long Sahlin *skis* on the fjells. He was not easy to keep up with either up or down hill. His sure-footedness was wonderful.

For those who had newly greased snowshoes it was no easy job to get up Skurdal hill. It was always up, up, and it was lucky that the wind was with and not against us. When it was fairly level one could scarcely keep one's feet, and often it was enough to spread out one's coat to be blown along. We reached the last crest that encloses the Rensäter valley. What an enchanting view. The mountains glittered in the bright sunshine—the heights of Snasa, Syl, Gluck, Fongfjell and many others. We had now a fine run down to the Säter, but it was not advisable to take a straight line over the hard frozen snow, for the birch woods were much too thick and we had a tremendous wind behind us into the bargain, and so the good man Gudorm thought it wisest to go by "skrew," *i.e.*, to zigzag down the hill.

Off we went, at such a pace that the eyes watered and we could not see anything. We went on all the same till 2 or 3 men fell. I must however say that, to the credit of the party, there were several who never had a fall in the whole expedition.

We got successfully together over the deep ravine which we met near the bottom of the valley. It was an imposing sight to look back up the long mountain slopes, and we thought what a job it would be to get back! But not to trouble about this, we must first find the Royal Shooting Club's pretty villa, to eat the sandwiches we had brought with us.

Rensjösäter is a veritable oasis in the fjells. Lucky are those who can come here in summer time and live a wild country life with shooting and fishing!

We were glad to get into shelter from the wind and eat our sandwiches and oranges—the latter excellent for the thirst which always torments one after a hard snowshoe walk.

*Celsius thermometer in which $5 = 9^{\circ}$ Fahrenheit.

†This word is suggested as a more racy expression than 'snowshoeman', or 'snowshoer'.

After half an hour's rest we started back. In the ravine abovementioned one of the party ran into a bank of snow and broke one of his *skis*: he had to get home on a *ski* and a half, which he managed to do, but found it awkward going down hill.

It was mighty hard to make one's way up the slopes against the wind, and the less fit ones had often to stop to take breath. At last however we conquered the ascent, and then it was nearly all down hill for a mile* to Storlien. The wind now changed and we had it again contrary. Such opposite winds often prevail on the mountains. Down we went at a giddy pace, and the falls were fewer than one would have expected in such difficult going. The last run into Storlien was splendid, and we were back at 1-30.

By the afternoon train from Stockholm came Captain P.M., one of the directors of the Snowshoeing Association, who had promised to be our leader on our mountain trips.

Wednesday, 30.—3° of frost: strong southerly wind.

We formed two parties. One, with Gudorm as guide, struggled over Skurdal hill to Tovmodal in Meraker, while the rest of us were to climb the "Majestic Gluck."

There is not much to be said about this trip, which resulted in disappointment, and we came back not in the best of humors, while the other party talked of their splendid journey over the most varied and magnificent hills.

Thursday, 31.—The next three days were set apart for an expedition to the Syl hills and Tjatjasen where we were to spend the night with the Lapps.

The fjell road from Storlien to the Syls was about 30 kilometers thence to Tjatjasens, about 15 kilometers, and 30 more back to Storlien. We were obliged to go *via* Tjatjasen because the Touring Club were expecting other parties and could not let us have the hut at the Syls.

On the morning of the 31st it blew such a strong contrary wind that we resolved to take the train to Enafors (13 kilometers) and "skid" from there to Tjatjasen. We found it very bad going and up hill all the way. Not only on the marshes had the snow been blown away but also on the mountain slopes. The wind too changed and was dead against us: In spite however of all obstacles we kept up our spirits and by 2 o'clock we reached the Lapp Torkel Jacobson's place at Tjatjasen, and right glad we were to get off our

* A Swedish mile is more than six English miles.

snowshoes and take refuge from the blizzard in the cottage which consisted of one room and a kitchen. We were hospitably received by the Lapp girl Sigrid who, with her two small brothers, were the only ones of the family at home.

Torkel does not look much after his reindeer, which were wandering about the fjells with other herds, and in such circumstances it is clear that he cannot keep any account of them.

The settled Lapp does not generally do well. Instead of tending his herds, and going after the wolves, their worst enemy, he stays at home smoking his pipe, grows lazy and indifferent, and loses his nomad nature. To become a farmer and till the soil never suits the Lapp. We met a wolf just before getting in, of whose existence good Torkel had no idea.

The cottage was clean and neat, and after a morsel to eat and a pipe, we enjoyed a rest before dinner.

The Lapp's hut was made of round poles and roofed with turf; besides this there was a small hay shed and stall for a horse and a cow; the entrance was behind; an old curtain hung outside served as a door. Inside was a fire place on a grate.

To get a draught in a Lapp hut, there is a hole low down near the ground, and when this is stuffed up, it must needs smoke inside. If you want to sleep, you must cover yourself up, stop the draught hole, quench the fire, and then even it will not be overwarm.

The wind raged outside. We who lay in the hut with reindeer skins under us on the ground could tell how the wind caught the roof, and we were afraid that it would blow the hut right away.

I awoke several times and felt uneasy as to whether the men had up-ended their snowshoes properly on the lee side, for if not and there were a heavy fall of snow in the night it might be difficult to find them in the morning.

It froze hard at night, and the felt rugs were white with snow that had blown in.

We were joined here by two more persons, Captain Bratt of Trondhjem, a well known snowshoeman, and Engineer Wallenberg of Stockholm.

The latter had come back from the Syls separated from his party and without food. He told us how his party had gone with a guide to the Syls, a terrific storm had arisen so

that they could not see two yards before them, they could not find the hut where they were to meet their comrades and pass the night, they had been obliged to turn back, after being close to the Syl hut without being able to find it.

Friday, April 1.—When we got up in the morning our limbs were stiff with cold : we soon saw that it would be impossible to go to the Syls. The storm had not abated, and we all agreed, that we had best go back the same way we had come.

This was a great disappointment. The day before we had struggled up hill all day in hopes of having a good down hill run on our return from the Syls.

We had however to crawl on hands and feet down the smooth ice ; the wind was with us but still troublesome for skis are not suitable for slippery ice. We got to Enafors at 2 P.M. and took the train back to Storlien.

Saturday, 2.—Easter Eve. We went up Skurdal hill. Some of the party went on leave to Trondhjem, but on the other hand we were reinforced by about twenty Swedish and Norwegian snowshoers, among whom were some ladies.

Gudorm led the way as guide. We took an hour going up : then came run up on run down, each one different from another. At first down the steep north side covered with hard rough snow that caused many falls : then a bit of field with molehills without snow, then hill after hill always down ; first one that we had to take by "screw," then one in the shape of the letter S, and God help anyone who could not follow its windings ! It was continual change, and always down hill. We were now in a mountain pass with wild steep sides, we passed the "stone in the green dale," an old border stone, just east of which we crossed the frontier.

The horizon embraces wide and beautiful views over Meraker, above which the Fongfjell rises majestically in the back ground.

Our greatest trouble was a deep ravine, difficult to cross, and but few got over it without an "incident." Both Swedes and Norwegians were well pleased with the expedition. We ended with an absolutely grand run nearly to Tovmodal.

As we got gradually more and more into the region of trees, at first straight down among the dwarf birches, then among the pines, and as the wood grew thicker, so the running grew more difficult, for we had to make sharp curves to avoid colliding with the trees.

Unawares almost we found ourselves at the station waiting for the train to Storlien. It was nice not to have to toil up all these hills again, but to go home comfortably by train.

During the remaining two days we did two more trips, ever with the same interest and pleasure: it seemed that we could not have enough of it.

On Sunday afternoon there were competitions got up by the Storlien Snowshoeing Association, in which the first prize in the 12-kilometer race was won by one of us, Corporal Sjöberg, a very good performance for a plainsman.

On Easter Monday we started on our return journey to Umea where we arrived next day.

A few words as to equipment and marching.

Snowshoes.—The "Sahlin" proved decidedly suitable, superior to all other Swedish patterns as well as to the Norwegian "Telemark." The latter are better for avoiding a sudden drop or a hole, but are inferior on the longer and gentler slopes on the high fjells. Our Jemtland fjells are generally less steep and bold in their contours than the Norwegian, without being any tamer, and by "tacking" one can easily get down such steep slopes when it would be too dangerous to slide straight down on the long "Sahlins." The latter go much more steadily in hard frozen snow than the broad "Telemarks", which however are very trustworthy when one is obliged to cross the mountain slopes aslant.

I myself used the "Lignell" high-mountain-model snowshoe and can thoroughly recommend it for general use; it is an excellent military and travelling snowshoe. It is a modified Sahlin, and is provided with a steering piece in the middle of the heel. A hundred of these have been ordered for the regiment.

Fastenings.—The "Huitfeldt," with which the snowshoe follows like a skate the least movement of the foot, is without doubt the only one that is really good, and it is coming more and more into general use. It requires boots with thick soles projecting beyond the upper leather. The heels even should project a little to prevent the heel-strap from slipping down, or else a small extra heel can be added; no instep strap is wanted and the snowshoe is put on by a single motion. Another advantage is the ease with which with this fastening, one can make this snowshoe glide, by means of only a pressure of the sole, so that one can cry "away with all other fastenings whatsoever."

MILITARY SNOWSHOEING IN SWEDEN.

It is certainly no pleasure, when the thermometer marks 20 or 30 degrees of cold, to do up a mass of buckles or fasten a number of straps which sooner or later get slack and must be tightened up again.

A pair of good sticks are necessary, so as to be able to put on a brake down hill.

Clothing.—Many persons wear thick stockings reaching to the knees, sometimes inside their boots, sometimes drawn on over them. These are expensive and unnecessary garments and soon wear out. The best thing is a pair of thick stockings inside, and an old woollen stocking or cloth bandage wound over the boots.

Sahlin boots, with thick projecting soles and heels, and putties.

The clothes should be made of the best homespun material, not too thick; a cloak should be worn of light waterproof stuff with a hood, to be put on in a wind or at a long halt; a light woollen cap with continuation to let down and a shade (or peak), a pair of dogskin gloves and woollen mitts (a spare pair to be always carried), a backbag with broad shoulder straps of webbing: the carrying power is much increased by a body strap passed through the shoulder straps.

For greasing Wik's mixture is very good in both frost and thaw. The snowshoes must be warmed before being greased. One must be very careful about this, for while grease is absolutely necessary in mild weather, newly greased snowshoes are terrible on hard snow; slippery as glass they slide as much backwards as forwards, and it becomes a labour of Hercules to get up any hill.

The day's march should not exceed 30 to 40 kilometers: after every hour's march there should be a halt of 10 to 15 minutes, on steep ascents more often but shorter, with a longer rest halfway.

Never drink spirits on the march: chocolate cakes produce thirst: sweet oranges or tea are most refreshing. Don't smoke till you get in. The Commander should go at the head, next after the guide: a trustworthy man should be in rear to see that no one is left behind.

Going down hill the Commander should, along with the guide, seek out the best way: a long distance is necessary between each man, and frequent halts to find out that all are present and that no accident has happened. Strict orders must be given to keep a good look out, to follow exactly the man in front, and not to go aside to find a better way.

In order to keep up a good and even pace in soft snow there should be three men detached in front, to press down the snow, each one leading in turn. They should be relieved every half hour. The Commander would thus be always fourth or fifth and be able to give orders and direct the march. In this way a detachment can keep going all day at a good pace.

The Norrland Dragons have thus been the Pioneers of military snowshoeing, and have shown what can be accomplished with a little good will. May many follow the example and make themselves well acquainted on snowshoes with the ground where Armfelt's men met with destruction.

Let us remember the answer given by the Norwegian hill farmer to General Armfelt when the latter asked him if he thought the Swedish army could get back home over the fjells:—"Yes, if you know the fjell and can go on snowshoes." But, they could not, and so perished miserably.*

* This incident occurred in the reign of Charles XII. Baron Armfelt was the same who, after the battle of Pultava, defended Helsingfors against Peter the Great.

NOTES ON THE TRAINING OF BRITISH INFANTRY SCOUTS IN RECONNAISSANCE.

By W.

To the last July number of this Journal I contributed some brief notes on the organization and training of British Infantry Scouts. I propose in this article to indicate as briefly the lines on which scouts and others should be trained in Reconnaissance duties, and to suggest some points which should be included in this instruction. The course suggested has been tried on more than one occasion by the writer in a British regiment with excellent results, the non-commissioned officers and men learning readily and applying accurately all the necessary data and writing after some time excellent reports. Let us consider first the official course now in force as laid down in Army Regulations, India, Volume II, and published in pamphlet form as "Instruction in Field Sketching and Reconnaissance," dated 1888. As a clear enunciation of the principles that should govern this instruction I cannot do better than quote the opening paragraph:—"The whole teaching must be based upon the principle that the men are not to be trained as makers of maps, but as intelligent soldiers who will be required to work either alone or to assist officers investigating as quickly as possible the military capabilities of a piece of country, whether maps of it are already in existence or not." Unfortunately, these principles are by no means followed: by the ninth day you are told to expect fairly good reports: on the fourth day you are told not to expect "the fineness of engraving." Hachuring and contouring are acquired on the fifteenth day: on the twentieth day—the end of the course, you are warned that "the length of the course is only sufficient to allow of the acquisition of elementary knowledge." Any one who has instructed Sandhurst or Woolwich cadets, or *a fortiori* British soldiers, would find it hard to repress a smile at such optimism. The book, to put it mildly, is not practical.

In accordance with the opening paragraph quoted above attention should be devoted mainly to reporting. Once map-reading, conventional signs, and the use of the compass has been solved men should be given for their sketches previously prepared paper, on which the principal points on the road or area to be sketched are marked. There is no doubt that this is the only method of getting useful maps

and reports out of partially trained men. Their difficulties, even with these aids, will be quite sufficient to occupy all their energies. With reporting the case is rather different: it can easily be learnt by any man with a 2nd Class Certificate of Education, and is of the greatest use to an officer who is rapidly surveying for military purposes a large area of country. I have employed a number of men, working in pairs, to report on the military capabilities of roads, camping-grounds, fords, water, supplies, etc., and have found, on checking, that their reports were very soon accurate and concise, and very useful.

A good report however requires for its execution more than clear language and good writing: a knowledge of "what to observe and how to report it" is indeed essential, but a good deal of detail as regards the subjects mentioned above must be acquired before a report can be considered in any way reliable. This information is available, but is spread over a number of official books, and unofficial books give it inaccurately. I have therefore quoted in every case the authoritative official source for all my figures, although I am aware that unauthorized Text Books of Topography, etc., publish data which vary considerably from those I have given.

I have not, of course, made the notes under the headings in any way comprehensive; I have merely mentioned such data connected with them as are valuable, and not at once available.

I. Roads.—(Instruction in Military Engineering, Volume V, paragraph 150.)

	Minimum width
(1) Infantry in file, pack animals, one direction	... 6'
(2) Do. do. both directions	... 8'
(3) Guns and waggons, one direction	... 9'
(4) Infantry in fours, cavalry 2 abreast	... 10'

for two lines of (3) and (4) rather over double width: gradients never to exceed 10° or 1 in 6 for ordinary traffic.

II. Slopes and gradients.—(Text Book. Military Topography. Part I, page 118.)

Slopes are expressed in degrees, thus— 5° , gradients in fractions, thus— $\frac{1}{2}$. To change from one to the other divide

NOTES ON THE TRAINING OF BRITISH

and multiply respectively by 60, i.e., gradient $\frac{1}{10} = 6^\circ$. $10^\circ =$ gradient $\frac{1}{6}$.

III. Bridges.—(Instruction, Military Engineering, Volume III, paragraph 4.)

			Minimum width.
Infantry single file	...	...	... 1½'
Infantry file, cavalry single file, military carriages by hand	...	...	... 6'
Infantry fours, Cavalry 2 abreast, military carriages	...	...	... 8'
If orderlies are to pass—add	...	...	... 2'
Camels	...	...	... 10'
Elephants	...	...	... 12'
Traffic 2 directions	...	...	... 16'

IV. Fords.—(Manual, Field Sketching, page 103.)

				Maximum in sluggish stream.
Cavalry	...	...	...	... 4' 6"
Infantry	...	...	...	... 3' 6"
Guns and waggons	...	...	...	... 2' 6"

These depths must be diminished if stream is rapid. Fords are usually found diagonally between two bends.

V. Camps and Bivouacs.—(Encampment Regulations, India, 1902.)

Camp of British Infantry Battalion of 814 men and transport on Field Service in India—

Measures 136 yards by 136 yards.

Bivouac measures 106 yards by 166 yards.

Camp of British Cavalry, squadron of 150 men and transport—

Notes on the Training of British Infantry Scouts in Reconnaissance, by W.

Measures 89 yards by 72 yards.

Bivouac 58 yards by 65 yards.

Area per head per Infantry man in camp, 20 square yards, in bivouac, 12 square yards.

Area per head per Cavalry man in camp, 40 square yards, in bivouac, 24 square yards.

For smaller units area per head required is less.

VI. Tents.—(Encampment Regulations, India, 1902.)

A. G. S. 80 lb. tent when pitched measures from peg to peg $5\frac{1}{2}$ yards by $3\frac{1}{2}$ yards and holds 8 men.

A G. S. 160 lb. tent measures $5\frac{1}{2}$ yards by $5\frac{1}{2}$ yards and holds 16 men.

VII. Loads.—(Army Regulations, India.)

A coolie in hills carries	...	...	48 lbs.
" on plains "	...	...	60 "
A pack mule "	...	...	2 mds.
A camel "	...	...	5 "
A Government mule cart	...	...	10 "
A Government 2-bullock cart in hills carries	...	...	8 "
" " " plains carries	...	...	10 "
1 box small arms ammunition holds 1,100 rounds and weighs	...	...	1 md.

VIII. Water.—(Manual, Military Engineering, Section 81, and Instruction, Military Engineering, Part V, pages 55 et seq.)

	Gallons.
Daily allowances, per man, drinking	...
" drinking and cooking	...
" all purposes	...
per horse, drinking	...
" all purposes	...
drinking—mules, bullocks, ponies	...
" camels	...

Horses drink about 2 gallons at a time, take 5 minutes to do so and should be watered 4 times a day.

1 gallon water weighs	...	10 lbs.
1 cubic foot of water contains	...	6 $\frac{1}{4}$ gallons.

To purify muddy water add 6 grains alum per gallon.

Impure water should be treated by adding enough Condry's Fluid to make it slightly pink when boiled.

If water is boiled and tea made it is always safe, as tannin destroys the noxious microbes.

To find volume of water in large streams estimate by formula $\frac{1}{2}$ breadth by depth by velocity = volume, where velocity is estimated by number of feet per second a cork floats down stream.

IX. Wells.

1. Surface area found by formula πr^2 or $\frac{22}{7} \times \text{radius} \times \text{radius}$. (Radius in feet.)

Care should be taken to obtain approximate diameter by dropping plumb line from top of well so as to ascertain the inward slope of the sides.

The volume in gallons contained in the well is then found by multiplying the surface area by the depth of the water in feet and multiplying the result by $6\frac{1}{4}$.

2. An easier way of finding the surface area is as follows:—

Take the diameter at surface of water, if 12' or over subtract 2, if 11' or under subtract 1, and square the remainder.

Example.—

Diameter of well at surface of water, 9'.

Take off leaves 8', $8 \times 8 = 64$ square feet.

This method is just as accurate as the solution by πr^2 as the diameter and depth can only be ascertained very roughly: moreover it is very much easier to work out the answer in one's head; in the case of soldiers this is of great importance.

X. Rivers.

The right bank of a river is on one's right hand as one looks down stream.

XI. Railways.

Broad gauge—Indian	...	...	...	5' 6"
Medium gauge—British	...	...	...	4' 8½"
Metre gauge—Indian	...	...	...	3' 3½"

The gauge of a line is the distance between the inner edges of the rails.

A battalion requires 2 trains or $30 + 16 = 46$ vehicles to carry it and its transport. An engine must never have over 30 vehicles to draw.

XII. Fodder and grain.—(What to observe and how to report it.)

1 cubic yard of hay in rick	weighs	200 lbs.
" " straw	" "	140 lbs.
" " grain	weighs	900—1,300 lbs.

XIII. Billeting.—(Manual Field Sketching, page 106.)

Find length of building in yards.—

For rooms 25' or more wide allow 3 men per yard.

" " 25'—15' wide " 2 " " "

" " 15' or less wide " 1 " " "

Horses.—1 horse per yard for barns 24' and over in width.

1 " " 2 yards " under 24' in width.

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XIV. Supplies.

Issue.	British soldier.	Native soldier and follower.	Mule.	Bullock.	Camel.
Meat, lbs.	1½ daily	28 ozs. weekly.			
Bread, lbs.	1½ "				
Vegetables, lbs.	1 "				
* Atta or Rice, oz.	1 "	* 1½ lb. daily.			
Ted, oz.	1 "	½ oz. "			
Sugar, oz.	2½ "		1	1	1
Salt, oz.	½ "	½ "			
... ..	...	1 oz. "			
Fuel, lbs.	3 daily	1½ "			
Gur ... ..	...	1 oz. "			
Gur in lieu of meat to non-meat eaters. ... ..	...	4½ oz. weekly			
Dal, oz. ... ..	...	4 "			
Ghi, oz. ... ..	...	2 daily			
Chillies, oz. ... ..	...	½ "			
Turmeric, oz. ... ..	...	½ "			
Dry Garlic, oz. ... ..	...	½ "			
Dry Ginger, oz. ... ..	...	½ "			
Grain, lbs. ... ..	...	...	6	6	6
Fodder, green, lbs. ... ..	...	...	30	35	40
or Fodder, dry, lbs. ... ..	...	...	15	25	25
Bhoosa, lbs. ... ..	...	...	15	...	16

XV. Heights and Distances.

To find the height of a house or tower, etc.

Take two sticks, one twice as long as the other, e.g., one 6' long, the other 3' long. Place the 3' stick 3' from the 6' stick, both upright and in a line with the object to be measured. Then move both sticks, keeping them 3' apart, until the top of the object, and the tops of the two sticks are in the same straight line—i.e., until you can "take a sight" along the tops of both sticks on to the top of the object.

This "sight" will then be at an angle of 45° to the ground, hence the height of the object is the length of the base of the triangle thus formed :—

Example.—

A B is the object to be measured.

C D is a 6' pole.

E F is a 3' pole.

F D is 3'.

The poles are moved till E C A are in a straight line.

Then $\angle A G B$ is 45° , hence $G B = A B$.

Pace G. B., and this gives height of A B.

To find the breadth of a river, etc.

Pace 60 yards along one side of the bank, marking each end of the base with a pole or prominent object (A B); then pace 20 back, and put in another pole (C), thus dividing the base into 2 parts which are as 2 : 1.

From the far end of the base, pace along at right angles until the point on the far side of the river-bed, opposite A, the point C, and you yourself, are in the same line. Twice the length thus paced gives the breadth of the river.

Example.—

The distance $\times A$ must be at right angles to the line A B:
 $A C = 40 \times B C = 20 \times$.

The triangles $A \times C$ and $B = D C$ are similar, and $A C = 2 B C$: hence $\times A = 2 B D$.

B D is paced and thus measured practically.

Hence $\times A$ is found.

The figures I have given need not all, of course, be committed to memory, though the detail of water and camping should be and can be remembered without difficulty: but such data should be available when making reconnaissance reports.

By arrangement with the Secretary of the United Service Institution of India, copies of these notes may be had free on application to him.

PRECIS OF FOREIGN MILITARY PAPERS OF SPECIAL INTEREST.

GERMAN PAPERS.

BY MAJOR H. W. R. SENIOR.

*Internationale Revue ueber die gesamten Armeen und
Flotten (January, February, March and supplements).*

The January number contains a very interesting account of the trials in Italy of motor cars for use in war. These trials consisted of a series of experiments as to the hill climbing and distance-covering powers and the reliability of the motor cars for use in mobilisation to carry information and orders and to take staff officers quickly to important points. The motors had to cover distances up to 560 km. (348 miles) in the 24 hours inclusive of the ascent and descent of such passes as the Spluegen (6,913 feet) and the Stilsser Joch (8,888 feet). The conclusion arrived at was to the effect that the motor car as an engine of war had a great future. It could be used not only as a fast messenger, but also in the shape of specially constructed cars for important technical work. For the first purpose the formation of Volunter Corps among the owners of these vehicles is advocated as fully meeting all requirements on mobilisation and saving expense in peace time. For the second the State must face the question and be prepared to disburse the necessary moneys. During the manœuvres in the United States motor cars prepared as telegraph stations with means of laying field lines rapidly were found to be a great success. This subject is again shortly dealt with in the last article of the March number.

In the March number the new French Infantry Training Regulation is criticised. In view of the short two years service of the French army every movement of the rifle and formation in close order drill has been reduced to the simplest. The manual exercises now consist of the "slope", the "order," the "charge magazines", and the "present." "Present arms" as a compliment is done away with and all compliments are paid by sloping arms. Volley firing is discountenanced and it is laid down that in order to obtain the best effect short bursts of rapid fire are most useful. The German critic fears that it will not be possible to insure co-operation if individualism is to be allowed such free play in the attack. The new French Cavalry Training is also noticed but without criticism. It may be remarked that the French are apparently converted to the idea of the fire-fight on foot.

Japan has in her last budget made large allowances for the fortification of 7 principal ports. The whole coast has been divided up into areas of defence.

The Russian Commissariat and supply arrangements in Manchuria form the subject of a very laudatory article in this number.

The 70th French supplement contains a translation of the article in the *Militär Wochenblatt* comparing the French and German artillery regulations, which was dealt with in the last number of this Journal.

The next article is a review of the Italian, English and German combined land and sea manœuvres which took place last year. The Italian manœuvres are said to have brought into prominence the weakness of Naples to resist a combined attack of this description. The want of practice in such work is shown by the length of time, 12 hours, which it took the Italians to put on board of 10 steamers, the small force of 5,000 men, 700 horses and 12 guns. General French's force of 12,000 men, 1,750 horses and 376 guns and other wheeled vehicles was put on board in 17 hours. In the German manœuvres 3,600 men, 200 horses, 8 guns and the full complement of wheeled transport (number not given) was put on board in 3 hours. The German manœuvres varied from the two others in supposing that the defending fleet was still active though only able to participate in the defence of the coast by means of very distant fire.

In the last article General Kunhardt von Schmidt places Liao-yang among the great battles of history as only inferior to the battles round Metz in point of results, of the numbers engaged and of losses.

In the French supplement No. 72, Lieutenant-General von Boguslawski has an appreciation of the siege of Port Arthur in comparison with those of Saragossa, Sebastopol and Paris. Saragossa is remarkable for the desperate defence made by its people, so much so that of the original garrison of 30,000 soldiers and armed inhabitants only 9,000 were alive when what was left of the town capitulated after a 2 months' siege. It was also remarkable for the liberal use of mines made by the French Engineer General Rogniat. Sebastopol is remarkable for the earth-works erected by the skill of Todleben, the use of the crews of the blockaded Russian fleet in the defence, for the incomplete investment by the

allies which left the north side entirely free and for the rigours and inclemencies of the winter. Paris shows the power of highly trained troops to invest a place of great extent, which possessed a garrison superior in numbers. It also is an example of the power of famine in reducing a fortress and of the remarkably small effect produced by bombardment. Port Arthur combines something of all these sieges, but is principally remarkable for the attempts made by the Russians to keep the Japanese at a distance by the occupation of the positions at Chinchou and Nanshan and afterwards of 3 successive positions across the peninsula, before they were finally enclosed in the fortress itself.

This number contains a review of the sixth volume of Balck's "Tactic," which now completes this important military work.

Two articles on matters of naval interest end the number. *Militar Wochenblatt* (Nos. 155-159 of 1904 and Nos. 1-30, of 1905).

In the first of these numbers Count von Zepelin in an interesting criticism on the employment of the Russian infantry at the battle of Liao-Yang comes to the conclusion that the Russians occupied their fortified line in too great strength. He thinks some 25 battalions might have been spared from the front line to increase the reserve, the employment of which behind the left flank on the right bank of the Tai-tse-ho against General Kuroki's turning movement would probably have turned the scale in the Russian favour.

No. 157 gives an account of the life of Lieutenant-General Von Boguslauski and of his writings in celebration of the seventieth anniversary of the birthday of this distinguished military writer.

The third number of the current year details some of the war correspondents' experiences with both the Russian and Japanese armies. The convenient formula "want of tact" accounted for the return of many a war correspondent to his home. The whole management of these inquisitors by both sides is an object lesson which it is hoped we may take to heart for our own future use.

From No. 10 we gather that less than a quarter of the Russian Infantry Divisions and 13 *per cent.* of the Reserve Divisions have been sent to the seat of war while of the Rifle

Brigades nearly 60 per cent. have gone. These figures show to what a small extent mobilisation has so far touched the Russian people.

In No. 11 the aiming machine of the Sub-target Gun Company of Boston is very well reviewed. In this machine the rifle is fixed to a carrier which is counterpoised by a weight in such a manner that when held to a man's shoulder it is still free to move in any direction. The movements due to unsteadiness are then transmitted by the carrier from the rifle to a target by means of an arm with an universal joint so that the instructor is able to see exactly how the firer is aiming. By means of an electric connection with the bolt the actual spot at which the rifle was pointing at the moment of pulling the trigger can be recorded by a pin prick on the target. The machine appears to offer considerable advantages for the preliminary instruction of men off the range.

No. 13 closes some remarks on the new French Infantry Training Regulations with the statement that the book has evidently been written solely with the object of use in war, but that it had been better if further reports from the seat of the present war had been awaited before such binding regulations had been issued.

No. 20 gives an interesting review of the siege of Port Arthur which is said to herald a new dawn in the proper estimation of the value of fortresses. The subject of fortification is one that appears at present to be attracting a good deal of attention in Germany for it forms the text of a brochure published by the Grand General Staff, of a long article in No. 26 of this paper, and of a severe criticism in No. 30 levelled at the Japanese delay in bringing up heavy siege artillery, which the author considers, when it did arrive, was deficient in quality and only one-third of the quantity which was really necessary. If this statement is correct the performance of the Japanese in reducing this first class fortress is even more meritorious than is generally conceded or else its surrender is even more shameful than certain war correspondents declare it to be.

The German deduction, based on their experiences in 1870-71, that an invading army should capture only such fortresses as lie directly on its lines of operation or endanger its communications, though possibly true enough for a war confined to land, was not true in this instance, as the reten-

tion of the command of the sea by the Japanese was involved in the fate of Port Arthur. As long as this fortress remained Russian there was always the possibility of the Russians regaining command of the sea. The reduction of Port Arthur thus became of primary importance in the Japanese plan of operations.

The first supplement of the year is an interesting review of Frederick the Great's generalship from Leuthen to the end of the Seven Years War. His work has left its mark on the organisation and spirit of the German army. President Roosevelt, speaking at the unveiling of his statue in Washington, said of him, "soldierly heroism reached its highest point."

The second supplement deals with the battle of Hochkirk, where on the 14th October 1758 an Austrian army surprised the Prussians under Frederick the Great and defeated them with the loss of a third of their force and over 100 guns. The Austrian General Daun did not push his advantage and the battle had consequently little or no effect on the campaign. This number also contains a review of the Gaudi manuscripts for the same year.

FRENCH PAPERS.

 BY CAPTAIN A. S. HOLME, R. E.

*REVUE DU CERCLE MILITAIRE, 31st DECEMBER
1904—18th FEBRUARY 1905.*

THE RUSSO-JAPANESE WAR.

The Battle of Ta-shi-chao, 24th July 1904.

The writer, Captain Painvin, gives an account of his personal experiences during this engagement.

During the artillery duel he noticed a large number of premature bursts amongst the shrapnel shells fired by the Japanese. The shells burst at the muzzle and gave the guns the appearance of firing black powder.

The terrific moral effect of the high explosive shells charged with Shimose powder, used by the Japanese, is remarked upon, as well as their capacity for destroying field works.

The heat on the day of the fight was intense, the Russian troops suffered greatly from thirst, and many cases of sun-stroke occurred.

The Russians abandoned their position at Ta-shi-chao at 2 a.m. on the 25th July, and retired on Hai-cheng. They burnt all stores at Ta-shi-chao Railway station before leaving. Ta-shi-chao was occupied by the Japanese during the course of the day.

The Battle of Si-mu-cheng (31st July).

The Battle of Si-mu-cheng took place a week after that of Ta-shi-chao.

About the middle of July the Japanese, as the action at Ta-shi chao already showed, decided to press on energetically on Liaoyang and Mukden. The brunt of their attack fell upon General Levestam. The latter was occupying with a single brigade the Dalin and Pkhalin passes, and pressed as he was by superior numbers, with one of his flanks threatened, he was obliged to retire on Si-mu-cheng. The Dalin defile fell into the hands of the Japanese; Pkhalin remained in the possession of the Russians.

After General Levestam's retreat the 2nd Siberian Army Corps under General Sassulitch was sent against the main Japanese forces which were reported to be advancing from Siu-yen.

A position was selected in the neighbourhood of Kangualin village, perpendicular to the main road from Dalin to Hai-cheng. Here it was decided to make an attempt to stop the Japanese advance on Hai-cheng.

A rearguard position was occupied on the crest of the line of hills which jut out into the angle formed by the Sha ho and its tributary, at this village of Si-mu-cheng. The occupation of this position permitted of a change of front to the south in case the Japanese attempted to outflank the main position.

The village of Sy-mu-lin had also been entrenched to guard against a turning movement on the Russian left.

On July 25th General Oku decided to march with the whole of his force against the southern front of the Russians, i.e., against the 1st and 4th Siberian Army Corps.

Later on the Russian staff ascertained that Oku's object was to get in between the 1st and 4th Army Corps, who had retired on Hai-cheng, and the 2nd Army Corps. The right flank of the latter consequently became a point of increasing importance.

The Japanese made a reconnaissance in force on July 30th and advanced against the Hangualin position at day-break on the 31st.

After severe fighting the Japanese gained possession of a hill in the centre of the Russian position. This hill was re-captured by the Russians at 5 p.m. at the point of the bayonet.

From the beginning of the engagement the Russian artillery had attained a superiority of fire over that of the Japanese. It was due to the energetic action of the Russian artillery that an attempted turning movement on the part of the Japanese failed. Later on in the day the Japanese brought up their field artillery to re-inforce their mountain artillery.

The 2nd Siberian Army Corps was able to hold its position until the following day, when, in order to conform to the general strategic plan, it retired on Hai-cheng. The retirement was effected in perfect order and was unmolested by the Japanese.

The Russians lost 500 killed and over 1,000 wounded during the day. There were about 40 casualties amongst the officers.

THE BATTLE OF LIAO-YANG.

26th August to 4th September 1904.

In the series of engagements fought round Liao-Yang between the 26th August and the 4th September, to which the name of the battle of Liao-Yang has been given, the Russians had 140,000 men at their disposal, while the Japanese numbered about 160,000.

After several rear-guard actions fought by the Russians, amongst which those of Ta-shi-chao and Si-mu-cheng have been mentioned, the Japanese advanced resolutely on Liao-Yang. At this time the Army of Manchuria, which had been considerably re-inforced, consisted of five Siberian Army Corps and two European Army Corps, the 10th and the 17th. Liao-Yang had been converted into a vast entrenched camp.

The Japanese troops, under Marshal Oyama, advanced in the following order: on the left the 2nd army (Oku), advancing from the south-west; in the centre the 3rd army (Nodzu) advancing from the south; on the right the 1st army (Kuroki) manœuvring so as to cross the Taitse-ho at Bensihu. Each army consisted of three divisions.

These three armies were thus concentrating on Liao-Yang by wheeling to the right, Kuroki's army forming the pivot of the wheel.

The Russian position at Liao-Yang is described at length. It was naturally a very strong one. The mountainous nature of the country rendered the Japanese advance very difficult, and most of the heights which they could occupy were commanded from the Russian position. In rear of the latter the country was open, and intersected by roads which enabled reserves to be brought up easily at any particular point. The first line had been carefully provided with shelter trenches. A second line had been prepared two and a half miles further back, concealed by materials available on the spot. Below Liao-Yang itself eleven redoubts had been erected, protected with broad ditches covered with wire entanglements, with military pits and fougasses. Four bridges had been built across the Taitse-ho, the railway bridge made the fifth.

A Russian officer states that there was no intention of holding out indefinitely at Liao-Yang. The object was merely to inflict as heavy losses as possible on the enemy before retiring on Mukden.

The Russian position at Liao-Yang had one serious defect: it could very easily be turned by following the line of mountains. In this case the Russian army would have found itself in a position identical with that of the French army at Sedan. It was the prevailing opinion of the Russian Head Quarter Staff that if Kuroki could be induced to come away from the hills, the position was one which admitted of a vigorous resistance being made to him. It was obvious that if Kuroki refused to leave the hills, the only course open was to inflict heavy losses on Oku and to withdraw the army exposed to Kuroki's attack by evacuating the Liao-Yang positions.

The artillery duel commenced on the evening of the 29th, lasted all day on the 30th, and the morning of the 31st. The Russian guns all made use of indirect fire. A very slow rate of fire became necessary owing to the length of the preparatory attack and in order to economise ammunition. On both the Russian and the Japanese side the artillery fire was remarkably ineffective, whether directed against artillery or intrenched infantry.

The infantry attack was eventually driven home on the left of the Russian position, most of the ground being gained at night. One hill was taken and re-taken three times, and finally remained in the possession of the Japanese.

By mid-day on the 31st the Japanese had gained most of the trenches, some of which however, held out until night-fall. By the morning of the 1st September the Russians had abandoned the whole of the San-chu-pur line of defence.

REVUE DE CAVALERIE.

November 1904, December 1904, January 1905.

The Principles of the new English Cavalry Drill Book.

This is a rather severe criticism of 'Cavalry Training, 1904.'

The writer is of opinion that the principles contained in it are of little value to a Frenchman, owing to the diversity of conditions obtaining in France.

The book is entirely based on the experience of the South African War.

The British, never having been at war with a civilized power since the days of the Crimea, have entirely ignored the lessons of 1870 and 1877, which are being proved over again in the Russo-Japanese war. Because it was found that charges in close order, ill conceived and badly executed, failed, it was decided to abandon them. The fact was ignored that the conditions obtaining in South Africa, in a campaign against an enemy who had no cavalry, were unique and would never recur in a war with a civilized power.

The writer quotes from Lord Roberts' preface. 'Instead of the fire-arm being an adjunct to the sword, the sword must henceforth be an adjunct to the rifle.'

He admits that this opinion is not accepted unchallenged in England, and quotes Sir John French's views as given in the Minutes of Evidence taken before the Royal Commission on the War in South Africa.

Cavalry, says the writer, is 'par excellence' the arm of moral effect. Moral effect is only obtained by the skilful combination of elements which turn to the best advantage space and time, 'those two enemies of mankind' according to the humorist. As a means of conquering time, forethought is the only weapon, in order to conquer space the only means is speed. There is the secret of cavalry, it possesses speed.

And since the horse gives cavalry its speed, the horse is its best weapon; after the horse, the carbine, revolver, lance, sword, even a stick at a pinch—according to circumstances, the lie of the ground, the enemy or the weather. Any one wishing to classify these weapons should bear in mind that the horseman's best arm is the one that is the least drag upon his pace, that is why the sword is better than the carbine.

Although the writer disagrees with the general principles contained in 'Cavalry Training,' he admits that a good deal may be learnt by perusing its pages. It teaches the lesson of developing initiative and responsibility in all ranks, the result of which will be a feeling of mutual confidence, the trooper in himself and his horse, the officer in the non-commissioned officers and men, and all in their Commanding Officer.

As regards the system of training, the writer considers that it does not differ very materially from that laid down in the French drill books. One point that might with advantage be copied by the French is that 'Officers and Non-Commissioned

Officers should be trained to replace those holding the more important commands and appointments—such as regimental and squadron commanders, troop and section leaders, etc.

REVUE MILITAIRE SUISSE.

December 1904, January, and February 1905.
Infantry Cyclists.

In spite of the experience gained in the South African war, England is the only nation that has decided to maintain permanent units of mounted infantry. Other nations have held aloof from this movement, either on account of the expense, the insufficiency of horses, or because it was unsuited to the organization of their armies.

The natural consequence has been that a less costly, although equally rapid means of locomotion has been selected, *viz.*, the bicycle.

Germany has been making experiments with cyclist companies, but no definite organization has been decided upon. Austria-Hungary has no good roads on its eastern frontier, and the parliamentary crisis it has been going through is against changes in its military organization. Italy has twelve "bersaglieri" cyclist companies to act in conjunction with its twelve brigades of cavalry. France intends to organize whole battalions of cyclists.

The writer deplores that Switzerland is a long way behind other nations in this respect.

After lengthy experiments it has been found that the folding bicycle which can be carried on a man's back is not a success. The "Normal" pattern of 1904 is the outcome of numerous trials. It has a fixed frame, enamelled black, 65 c. m. ($25\frac{1}{2}$ in.) wheels, and a "free wheel". With the best pneumatic tyres, acetylene lamp and bell, it costs 240 francs (£ 9-12), and can, except for the tyres, be manufactured entirely in Switzerland.

It is considered best that the bicycle should be the soldier's own property: a uniform pattern, however, being insisted upon. The tyres, lamps and bells will however belong to the cyclist corps, and will be issued free to the men on joining.

The duties of cyclists in war will be:—
(1) An effective support to the frontier guards during mobilization and after.

- (2) A support to the independent cavalry operating on the front.
- (3) Assist in the protection of the flanks during a battle, and so leave the cavalry at the disposal of the General Officer Commanding.
- (4) Undertake enterprises against the enemy's flanks and communications, especially at night and in a fog.
- (5) Support the independent cavalry in a pursuit.
- (6) Rapidly occupy positions and guard defiles during a retreat.
- (7) Carry out the duties of reconnaissance and primary protection at night and on the flanks.

The short rifle is the proper weapon for cyclists. The dress should be the same as that of the infantry. Knickerbockers are equally suitable for both, and a loose blouse should replace the tunic. The equipment requires no special attention. 180 rounds would be carried on the person.

The tactical unit is the company, which should not number more than 200 rifles, a smaller number would be preferable. Several companies might form a battalion, but as a rule a battalion would remain split up.

RUSSIAN PAPERS.

BY CAPTAIN W. C. BLACK.

*RUSSIAN MILITARY JOURNAL.**(November and December, 1904, and January, 1905.)*

Prince Eugene Napoleon.—In the November and December numbers is continued the account of Prince Eugene's doings during the time he was in command of the French army, until Napoleon joined him in the neighbourhood of Lutzen at the beginning of May, 1813, with his newly raised "Great Army". Eugene's forces were then amalgamated with the latter, and his tenure of supreme command expired. The articles do not deal further with the Prince's military exploits, except to call to mind the brilliant part he took in the operations before Lutzen with the vanguard of the Army, at the head of which he entered Dresden on the 8th May 1813. It is observed that if during the retreat from Moscow Prince Eugene may perhaps have erred on the side of caution, in these later operations, at any rate, he gave ample evidence that he had lost none of his energy and resource in the face of great difficulties. From Dresden Napoleon sent him back to Italy to resume the Viceroyalty.

The December number, in a concluding article, gives a general estimate of Prince Eugene's character and exploits. It is remarkable that when fate placed him at the head of Napoleon's army he was but 31 years of age, but he had already gained a wide experience and seen much active service. He was with the First Consul, Bonaparte, in Egypt: was wounded under the walls of St. Jean d'Acre: took part in the battle of Marengo: was then appointed Viceroy of Italy, a post he filled with credit for over seven years: he served with distinction in the campaigns of 1809 and 1812, and finally went through all the horrors of the retreat from Moscow. In all these varied experiences Prince Eugene proved himself to be a man of bravery and resource, and the possessor of great administrative capacity. He won the esteem of his contemporaries and the love of the people of Italy, and throughout Europe he enjoyed the reputation of being an honourable, disinterested gentleman. In the quiet solitude of St. Helena, Napoleon paid the Prince a handsome tribute, in saying that Eugene had never caused him a moment's

uneasiness, and in declaring that in a great leader of men it is necessary that intellect should be balanced by force of character or bravery, he quoted Eugene as an example of a man in whom this "balance" was most prominent, and which in itself was sufficient to have made him a very distinguished man.

The question of the transport of horses by "artificial means of communication."—An article by an officer in command of a party of the 2nd Ural Cossacks, proceeding in relief from Uralsk to Samarkand. The route followed was from Uralsk to Saratov by rail, from the latter place down the Volga to Astrakan by river steamer, from Astrakan across the Caspian Sea to Krasnovodsk, and thence by the Central Asian railway to Samarkand.

The idea of the officer in charge of the party was to make a careful note of the effect of the different modes of transport on the general condition of the horses, and with this object in view it was his intention to have the horses (54 in number) weighed previous to departure, at intermediate stages, and on arrival at their destination. Unfortunately, he was unable to carry out his plan in its entirety. The weighing and veterinary examination were duly carried out previous to departure, but it was only on arrival at Askabad on the Central Asian railway (36 hours from Krasnovodsk) that a second examination was possible. The whole journey from Uralsk to Askabad took 15 days 9 hours, of which 6 days 3 hours were halts. The horses were closely packed both in the railway wagons and on the steamers, with no room for lying down.

The weighing at Uralsk and Askabad was carried out at midday, after the horses had been fed and watered, with the following result:—

No. of horses.					Loss of Wt. in lbs. during journey.	Percentage.
2	...	...	...	...	10	3.7
2	...	...	...	...	15	3.7
11	...	...	...	...	20	20.3
1	...	...	...	...	25	1.8
6	...	...	...	...	30	11.1
8	...	...	...	...	36	14.8
1	...	...	...	...	41	1.8
6	...	...	...	...	46	11.1
2	...	...	...	...	51	3.7
4	...	...	...	...	56	7.4
1	...	...	...	...	61	1.8
3	...	...	...	...	66	5.5
1	...	...	...	...	71	1.8
1	...	...	...	...	82	1.8
1	...	...	...	...	107	1.8
1	...	...	...	...	118	1.8
2	...	...	...	...	...	3.7

One horse increased 5 lbs in weight.

The author proceeds to enlarge on the detriment caused to the condition of horses by transporting them by rail or steamer, and comes to the general conclusion that they should be treated as "invalids" in the matter of accommodation, diet, etc., when such journeys are unavoidable.

Corporal punishment in the Russian Army.—The November and December numbers contain articles dealing with the question of corporal punishment in the Russian army. An historical review is given of the various methods and implements employed since Napoleonic days, and of the efforts made at different times to mitigate, if not to abolish altogether, the terrible punishments inflicted. It was apparently only on the accession to the throne of the Emperor Alexander II that, together with the question of the emancipation of the serfs and the abolishment of corporal punishment in the case of civilians, the consideration of corporal punishment in the army and navy was seriously taken in hand. Reforms were gradually introduced in the matter of doing away with the severer methods of inflicting punishment, such as branding, etc., and of reducing the maximum number of strokes. It is incidentally mentioned that corporal punishment was abolished in the French army in 1791, in that of Prussia in 1848, in Italy in 1859, and in Austria in 1868, and that since 1881 corporal punishments are not to be found in English military law. The proposal to abolish corporal punishment absolutely in the Russian army met with considerable opposition, but this was eventually overcome, and on the birth of an heir to the throne on 30th July 1904, the law abolishing corporal punishment in the army and navy, both in peace and war, came into force.

A review of General Roney's Treatise on Field Firing.—

The author, who was formerly Commandant of the German School of Musketry at Spandau, maintains that every field-firing scheme should have for its objects the striking of one-third of the number of figure targets exposed, this percentage of casualties being assumed to be the "breaking point" of troops. It is observed that if infantry are firing at targets representing artillery, they should only be allowed 2 to 3 minutes, as, after that period of time, guns would certainly get the better of them, unless they had already managed to inflict serious losses among the batteries. Accurate judging of distances is most important and can only be ensured by the careful training of leaders. A formula is given for obtaining the number of cartridges required at any range to obtain certain results, from which it appears that at 500 metres 4.8 cartridges per man will be required to ensure $\frac{1}{3}$ of a line of 'head and trunk' targets being hit, an error

of 50 metres in range being assumed; and 16.3 cartridges at 1,000 metres.

Some curious experiments were carried out at Spandau to illustrate the statement that if the range is incorrectly estimated, a good shot actually obtains fewer hits than an indifferent one. Some 'very good', 'average' and 'bad' shots were grouped in 3 Sections. An error of $\frac{1}{3}$ of the range was assumed, and it was found that at 500 metres the 'very good' Section obtained 25.1% hits, the 'average' 25.8% and the 'bad' 18.4%. At 800 metres the results were 1.0, 2.8, and 7.9 respectively. Hence the following conclusions were arrived at:—

- (1) that if the range is incorrectly estimated the percentage of hits decreases with the accuracy of the fire;
- (2) that good marksmanship is, in the field where ranges are almost always wrongly estimated, only of importance up to 500 metres.

In the German army the use of combined sights is ordered for ranges beyond 800 metres, with 100 metres difference between the two sights. Experiments went to show that, using the combined sights, the 'bad' Section obtained the best results, especially at the longer ranges.

With regard to the question of rapidity of fire, the importance of judging the value of musketry by the number of hits per minute rather than by the percentage of hits to rounds fired, is insisted on. It is observed that the English Musketry course is the only one in which serious attention is paid to rapid fire. An example is given, illustrating how a figure of merit should be arrived at, taking time into consideration—thus:—if 190 men fire 2,765 rounds in $4\frac{1}{2}$ minutes and obtain 117 hits, their rapidity of fire is represented by $\frac{2765}{190 \times 4.5}$ or 3.25, and the percentage of hits is 4.23: the Figure of Merit is therefore 4.23×3.25 , or 13.7.

A Table of results of Regimental Field Firing includes the following:—

- (1) 80 'head and shoulder' targets at 800 metres, percentage (for 5 companies) of hits to rounds fired, a little under 3.
- (2) 30 heads and 30 'head and shoulder' targets on a front of 60 metres, ranges 600 metres, percentage 3.3. Fire was continued for 6 minutes, each man firing about 14 rounds.

- (3) 42 half-figure targets at 1,200 metres, 1,590 rounds fired, 9 direct hits and 5 ricochets.

Care of Sick and Wounded in war.—The writer calculates that patients collect in the field hospitals of a large army at the rate of 1 per 1,000 a day, *i.e.*, an army of 500,000 would have 15,000 in hospital at the end of a month. Field hospitals must therefore be cleared as rapidly as possible. This is effected by (1) Road transport, (2) Hospital trains, and (3) Hospital ships.

(1) Normally, a Russian Army Corps has a transport unit of 27 ambulances for road transport, with a carrying capacity of 200. In Manchuria units are being employed of half this size, to *viz.*, carry 100 patients; lying down accommodation is provided for 30, the remainder are seated. All these ambulances are two-wheeled, and the cooking cart is of the cavalry pattern. On returning to the front, the ambulances carry men going back to duty.

(2) Hospital trains have each 10 carriages fitted as ambulances, 1 for officers and 9 for men. They can carry 8 seriously wounded and 12 slightly wounded officers, and 72 (18 in four carriages) seriously wounded men and 160 (32 in 5 carriages) ordinary cases; total, 252.

Ordinary 3rd class carriages are also utilised, lying down accommodation being provided by means of frames (Kruger's system) into which the stretchers fit for serious cases. There are also carriages for kitchen, staff, stores, etc., the total number being 16. The staff, under the officer in charge of the train, consists of 3 doctors, 4 assistants, 5 nurses and 25 hospital orderlies.

Ordinary goods-wagons with straw or hay have often of necessity been used in Manchuria for removing the wounded.

German Hospital trains have a carrying capacity of 300, and French, 128. The writer considers that a Hospital train takes 47 days to make the journey from Harbin to Moscow and back, and so calculates that 94 trains must be employed (500 removals per diem) if the hospitals at the front are not to become congested.

Conversations of a cavalryman.—These articles are concluded in the January number. The training of the men in

the cavalry is divided into winter and summer periods. The former is devoted to individual instruction in horsemanship and horse-mastership, sword exercise mounted and on foot, fencing, dismounted drill, etc. It is insisted that the monotony of routine must be broken up as much as possible, and everything done to sustain the soldier's interest in his duties.

The summer training, commencing not later than 15th April, is divided into four periods:—squadron training 4 to 6 weeks—regimental training 4 weeks—Divisional training in conjunction with Horse Artillery 3 to 6 weeks—training with the other arms, 2 to 3 weeks. The writer considers that too much time is given to drill on even ground, and that rallying and the pursuit, in particular, are much neglected.

The three drills, in squadron training, which the Regulations allot to scouting are quite insufficient. Brigades and Divisions spend far too much time practising movements in mass. Considering the great demands made on leaders of a large body of cavalry, more time, even at the expense of squadron and regimental training, should be devoted to the manœuvring of the larger units.

The article concludes with an appeal to all cavalry officers, especially to those connected with the Cavalry School for officers, to move with the times, to study the working of the other arms, and to follow the changes taking place in the cavalry of foreign nations.

United Service Institution of India.

TACTICAL SCHEME COMPETITION. OCTOBER 1904.

THERE were 74 Candidates, of whom only 25 competed.

Major G. E. L. Gilbert, 34th Sikh Pioneers, *nom-de-plume* "ME JUDICE," has been awarded the prize of Rs. 50 as the Winner of this Competition. "UT QUOCUMQUE PARATUS" was adjudged a good *second*.

For the information of the Competitors, the Winning Solution is published verbatim (with a sketch of map E) on following pages.

The *nom-de-plumes* of Competitors are given below (with the exception of Nos. 1 and 2, *not in order of merit*) for the information of those concerned:—

1. "Me Judice"
2. "Ut quocumque paratus"
3. "Vigilantia non Cadet"
4. "Fortunatus"
5. "Venturia non Immemor"
6. "Ve Victis"
7. "Dum Spiro Spero"
8. "A General in Chief"
9. "The defence is always based on possibilities"
10. "Nec aspera terrent"
11. "Dulcis Amor Patriæ"
12. "Und Salzet ite hicht das"
13. "Joshua"
14. "Geologist"
15. "In Hoc Signo Vinces"
16. "Progredior"
17. "Ikona"
18. "Crusader"
19. "Revolver"
20. "Aquam Memento rebus in Arduis Servare Mentem"
21. "Nomad"
22. "Q. R. X."
23. "Tahorra"
24. "Sivan Dhu"
25. "Kacca"

TACTICAL SCHEME COMPETITION (OCTOBER 1904).

SOLUTION BY "ME JUDICE."

Detachment march orders by Lieutenant-Colonel A., Commanding Camp MARLOW, 9 a.m., 1st October 1903.

1. The detachment will march to WESTCOTT at 10 this morning.

Advanced Guard:—

Van Guard under command of Major D., X Dragoons.

Troops:—

One Squadron, X Dragoons.
One Company, 2nd Mounted Infantry.
6 Cyclists.

2. The Advanced Guard as per margin will move off at the hour fixed. Pace walk and trot. The Main Guard will march in the order given.

3. The Van Guard will maintain an interval of one mile from the head of the Main Guard and will keep connection with it. The Commander of the Van Guard will reconnoitre on a front of nine miles. He will issue his own subsidiary orders.

Main Guard:—

6 Cyclists.
One Squadron, X Dragoons.
X Battery, Royal Horse Artillery.
3 Companies (less one section, 2nd Mounted Infantry).

4. The Main Body

Main Body:—

Under command of Lieutenant-Colonel B.

1st 5th Regiment.

Troops:—

1 Section, 2nd Mounted Infantry.
13 Cyclists.
5 Regiments.
1st Company, Sappers and Miners.

as per margin will march at the hour fixed; point of starting the southern exit of MARLOW. As normal distance between the advanced guard and the Main Body will not be maintained today, Lieutenant-Colonel B. will provide for the local protection of his command on the march. He will endeavour to reach WESTCOTT by dawn tomorrow.

5. All troops will carry *two days' emergency rations*.

6. The reserve ammunition of troops composing the Advanced Guard will be carried exclusively on pack horses; no other transport of any kind will accompany the Advanced Guard.

7. The 1st and 2nd Line Transport of the entire detachment will follow at an interval of 400 paces in rear of the Main Body. The Army Service Corps Officer in command will place himself under the orders of Lieutenant-Colonel B.

8. One Medical Officer will accompany the Main Guard, and the other the Main Body.

9. The Supply Officer will accompany the Officer Commanding detachment.

10. The Officer Commanding detachment will march at the head of the Main Guard.

By order,

Copies of orders to all concerned.

C—D., Major,

Brigade-Major.

Lieutenant-Colonel A. has requested the attendance of Major D., X Dragoons, and the Officer Commanding 1-5th Regiment and 2nd Mounted Infantry at his tent at 9 a.m., when he makes them *confidentially* acquainted with the instructions from the Chief of the Staff. It is necessary that the Van Guard and Main Body Commanders particularly should be made aware of the object of the move.

Lieutenant-Colonel A. also gives Major D., X Dragoons, the following confidential verbal instructions which he is on no account to divulge:—

"On arrival at the line of the KENNET, should you meet with no resistance, you will personally raid the station. War has not yet been declared, but I consider my instructions to hold the crossings and to secure rolling-stock in the Southlanders territory sufficient authority for crossing the frontier. Place a guard at once over the points at the junction with orders to allow no train to run south. Secure the railway bridge. Seize the telegraph office, suspend the operators and replace them with your regimental telegraphists. When I come up your guards will be relieved and sent on to you. Line clear is to be given to all trains due from south provided they are not troop trains."

On arriving at the river line and finding it unoccupied Lieutenant-Colonel A., who would be then at LEYTON, at the head of Main Guard about 3 p.m., moves forward rapidly to the STATION. He finds his confidential instructions to Major D. have been successfully carried out and that 5 locomotives and 33 rolling-stock are in the station. Three trains are due before midnight from the south. He directs the Station

Master to despatch all rolling-stock to the next station on the London line before midnight. As the Supply Officer will probably have to supervise arrival of supply trains from the North, he is appointed Railway Staff Officer until relieved by Chief of the Staff. The Station Master is to be supervised by him. The Brigade-Major arranges for a small guard at the station and at the points.

Order to Officer Commanding 2nd Mounted Infantry.

WESTCOTT STATION,

3-30 P.M., 1st October 1903.

Please detail $\frac{1}{2}$ Company Mounted Infantry under an officer to proceed at once to MILLEND. His orders are to secure and hold the crossings at that point and to be responsible for the safe custody of the Railway Bridge. He will relieve the guard he finds over the Bridge. He will provide for local protection of his force.

*Message delivered by cyclist orderly
to Officer Commanding Mounted
Infantry outside Station yard.*

By order,
C—D., Major
Brigade-Major.

The next point that engages Lieutenant-Colonel A.'s attention is due provision for the protection of his force and the crossings over the river he has secured.

Outpost orders by Lieutenant A., Commanding detachment.

WESTCOTT STATION,

3-45 P.M., 1st October 1903.

1. The Van Guard will form the outposts for the night.
2. The general line to be taken up will run from KING'S HILL on the right through SHALFORD, RAYNE, HOME FARM, BOURNE HALL to the western corner of WELLINGTON WOOD.
3. The Main Guard will form the reserve and will bivouac on the ground between KILA and the STATION.
4. In the event of attack the Outposts will hold on to their line, offer a stubborn resistance and await reinforcements. It is of the utmost importance that the KING'S HILL—LONG HILL position should not be lost.

5. The Officer Commanding outposts will arrange to keep in touch with the detachment of Mounted Infantry at MILLEND.

6. The approach from GUILDFORD through WELLINGTON WOOD will be watched by the Mounted Infantry detachment at MILLEND.

7. The outposts will be relieved at dawn tomorrow.

8. The outpost line by day will follow the same general line as by night subject to any slight deviations considered necessary for purposes of better observation.

Dictated by Lieutenant-Colonel A. to Brigade-Major. Despatched by cyclist messenger to Major D. copies of above furnished late to Officers Commanding Corps and MILLEND Detachment.

By order,
C—D., Major,
Brigade-Major.

At 7-45 p.m. on 1st Lieutenant-Colonel A. receives a copy of Major D.'s orders for the disposition of his outposts with a map accompanying the report. These orders are not given, as they are not asked for in the Tactical Scheme. Major D.'s dispositions are shown in black on the map. He himself is at HOME FARM.

By sunset on 1st October Lieutenant-Colonel A. had carried out successfully most of the original instructions received from the Chief of the Staff, that is to say, he had secured the crossings over the KENNET at WESTCOTT and EASTCOTT and in their vicinity; he had found the railway bridge intact and had taken steps to prevent any damage being done to it; he had secured the rolling-stock at WESTCOTT and had reported the result by wire to the Chief of Staff on evening of 1st. By midnight the rolling-stock will have been got away safely to the north of the river; but the most important part of his duty still remained to be performed, namely, to hold the crossings. In a situation of this kind Lieutenant-Colonel A. knows that the most effectual way to protect and to hold passages over a somewhat extended river line is to take up a defensive position beyond and covering them. If troops are to cross the river without actually having to force the passage they must be protected from coming under the effective fire of an enemy's guns whilst doing so. A glance at the map shows Lieutenant-Colonel

A. that the ridge called LONG HILL affords the best defensive positions, as it not only commands the whole country to the south within distant Artillery range, but it covers to a very great extent almost the entire river line for which he is responsible from the view of an enemy advancing from the south and prevents that enemy planting his guns within effective range of the crossings. But on the other hand LONG HILL is itself only an under-feature of a higher hill and is commanded in its entire length by it. The heights of SHALFORD, of which KING'S HILL is the central peak, constitutes the tactical key to the whole defensive position. Those highlands will without doubt be the enemy's decisive objective in the forthcoming operations to contest the passage of the river KENNET. Once the heights of SHALFORD fell in to the enemy's hands with his artillery firmly established thereon, the entire river line would be dominated by his fire, and LONG HILL and the entire defensive position would be rendered untenable by reason of the enfilade fire that could be brought to bear on it. The retention of these heights ensures the security of LONG HILL which in turn affords safety to the crossings, and upon this perhaps depends the successful carrying out of an important strategical move, indicated by the presence of the Commander-in-Chief and Chief of the Staff at MARLOW.

The situation is not an easy one. Lieutenant-Colonel A. has not got sufficient troops for the *prolonged* defence of so extensive a position as that from KING'S HILL to BOURNE HALL. He must fight a delaying action. By showing so wide a front Lieutenant-Colonel A. knows that it is calculated to deceive the enemy as to his actual strength, compelling him to pause and reconnoitre the whole position carefully before committing his troops to an attack. All this means time and time gained is just what he requires. The main considerations for Lieutenant-Colonel A. are when is he likely to be attacked? How long must he hold out before reinforcements begin to arrive? His latest information to hand at 8-15 a.m. on 2nd October is to the effect that the nearest troops of the enemy was a mounted force with guns, on the whole inferior to his own in strength, provided there were no other troops immediately in its support. Part of that force, 2 regiments of cavalry with guns (estimated), was distant 12 miles at 6-45 a.m. One regiment of mounted troops was reported advancing on the same line by the SOUTHAMPTON ROAD and another by the WINCHESTER ROAD. Lieutenant-Colonel A.

calculates on not being attacked by that force much before noon. That is to say, the enemy who appears to be in greater strength on the SALISBURY ROAD was observed to advance at 6-45 a.m. at a point 9 miles south of RIDING. It would be in contact with Lieutenant-Colonel A.'s outposts by about 9 a.m., having driven in his reconnoitring patrols; but then the commander, finding himself forestalled at the river line and finding also an enemy in a strong position barring his way, would have to reconnoitre it carefully, determine its extent and flanks and then make his dispositions. Unless he was hasty and wanting in judgment, he would probably take not less than 3 or 4 hours over the preparatory stages. Lieutenant-Colonel A. calculates that his main body under Lieutenant-Colonel B. will arrive at 7-30 a.m. and he expects the remainder (2 squadrons) Dragoons to join him by 10 a.m. He knows the army is that morning in full march from MARLOW, but he has not been informed *where it will halt that evening*—a very important point. He concludes he need expect no more reinforcements on 2nd October and very likely none till noon 3rd, at which hour the army should begin to reach the river line unless it has executed a forced march on 2nd. X 8-30 a.m. he sends the following wire to Chief of Staff: "Force enemy estimated 4 regiments of cavalry with guns advancing against me. Expect an attack about noon. Have taken up defensive position two miles south of the KENNET." Lieutenant-Colonel A. decides on so distributing his force that his outposts form the firing line and supports. These if pressed are to defend the villages and other tactical points on the outpost line. He provides local reserves for the fighting line and retains under his own personal command a strong mobile force of all arms as a general reserve, which considering the extensive position he has to guard, he decides not to fritter away at various points that may be threatened along the line but to use it at the critical moment against the enemy's decisive attack when it has sufficiently developed itself. In the distribution of the troops for the actual defence of the position he provides for a preponderance of strength on his right flank for the defence of KING'S HILL.

At 8-30 Lieutenant-Colonel A. dictates the following orders to the assembled Commanding Officers:—

Defence Orders by Lieutenant-Colonel A., Commanding Detachment. { BIVOUAC WESTCOTT
8-30 a.m.

1. War was declared against Southland last evening by our Government.

2. We are in touch with a force of the enemy's mounted troops advancing against us. It is estimated at 2 Regiments of Cavalry and some guns on SALISBURY ROAD; 1 Regiment of Mounted troops on SOUTHAMPTON ROAD and 1 Regiment on WINCHESTER ROAD. This force forming one general line was observed 12 miles south of our position at 6-45 a.m. this morning.

As regards our own troops we are in touch with 1st Lancers on our right flank and with 10th Hussars on our left. The remainder of X Dragoons is expected to join the detachment at 10 a.m. today. Our Army is on the march to-day from MARLOW.

4. My orders are to hold the crossings over the KENNET and with that end in view it is my intention to dispute possession of the KING'S HILL—LONG HILL position with the enemy until our main forces arrive.

5. The Officer Commanding Sappers and Miners will detail $\frac{1}{2}$ his company to SHILDON and the other half to RAYNE, detaching a few men to HALL FARM for the hasty defence and garrisoning of those places. The Officer Commanding will also arrange to have the GUILDFORD ROAD blocked at the North-West corner of WELLINGTON WOOD.

6. Two companies 1-5th Regiment will act as a local reserve to SHILDON and RAYNE and 2 companies as a local reserve to HALL FARM and BOURNE HALL. Head-quarters and 4 companies 1-5th Regiment will proceed to KING'S HILL for the defence of that part of the position.

7. Two guns, R. H. A., will take up a position on LONG HILL at HOME FARM and 2 guns will accompany the wing 1-5th Regiment to KING'S HILL.

8. The Officer Commanding 2nd Mounted Infantry will detail half a company of Mounted Infantry to accompany the wing 1-5th Regiment to KING'S HILL.

9. The following will compose a general reserve at the bivouac under my immediate personal command—

2 guns, R. H. A.

3 squadrons, 10th Dragoons.

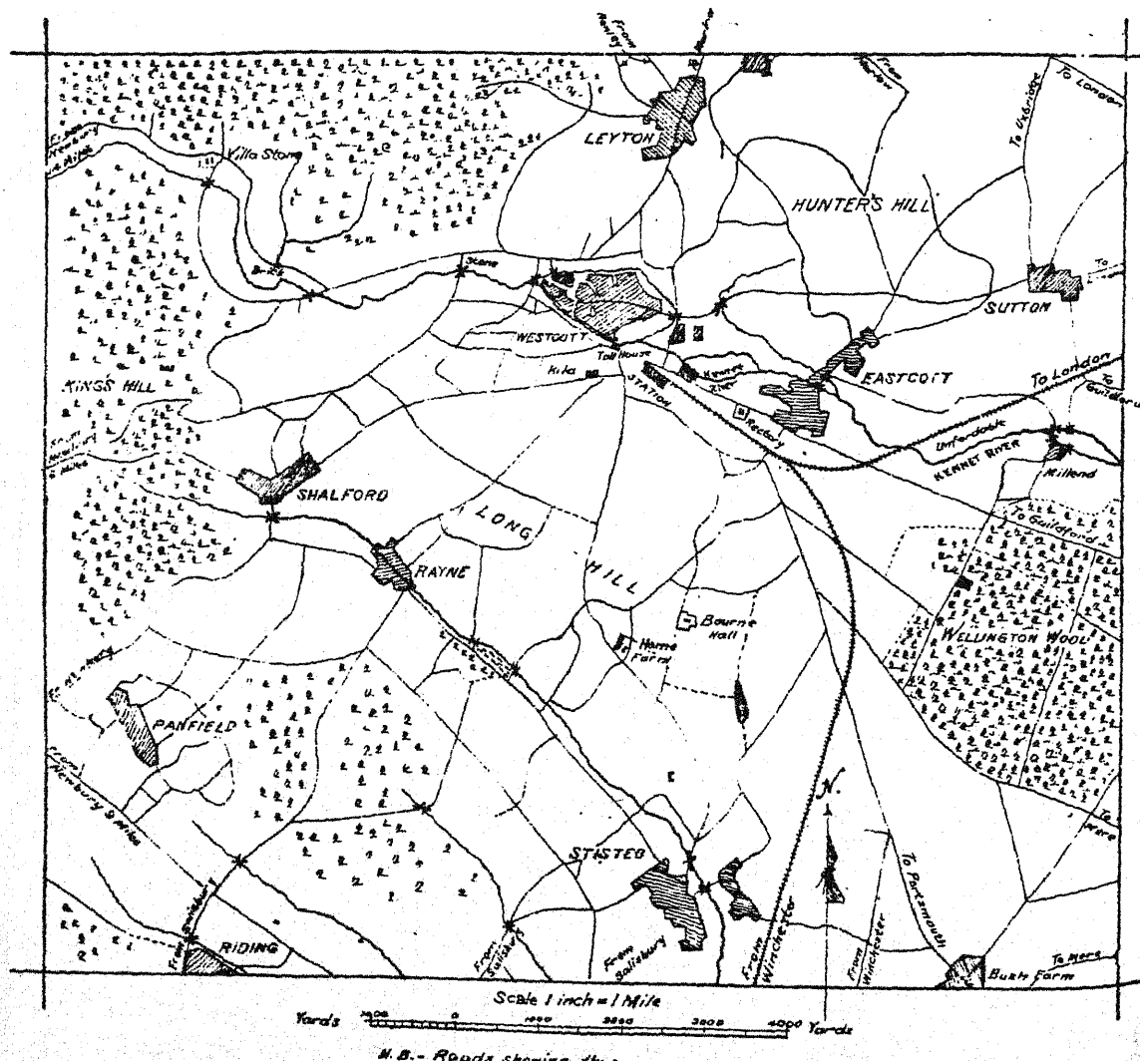
2 companies 2nd Mounted Infantry.

10. All troops to be in position by 10 a.m.

11. Lieutenant-Colonel B., 1-5th Regiment, will exercise control over all troops on KING'S HILL.

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12. The half company, 2nd Mounted Infantry, at MILLEND will continue there as a garrison, but will be prepared to move rapidly at a moment's notice.

13. The 1st and 2nd Line transport will remain in bivouac ready to move off if required.

14. In addition to the cyclists already with the outposts, 6 will accompany Lieutenant-Colonel B., 4 will proceed to MILLEND, the remainder with the General Reserve.

15. One Medical Officer will accompany the Wing 1st Regiment; the other will remain for the present with General Reserve.

16. 1st and 2nd Reserve Ammunition will accompany all units.

17. I shall be either on LONG HILL or at HALL FARM temporarily, or with General Reserve, but all reports will be sent me to General Reserve.

Dictated to assembled Commanding Officers.

Copy sent by Brigade Major to Commander of Outposts and to Officer Commanding Detachment, MILLEND.

A., Lieut.-Col.,
Commanding Detachment.

Lieutenant-Colonel A. would not issue more detailed orders in the field, as it would only tend to hamper the initiative, resourcefulness and intelligence of subordinate officers on the spot.

Lieutenant-Colonel A. himself must not try to see to many things at once or to do them, but to keep his eyes on the decisive spot, the heights of SHALFORD.

At 10 o'clock the dispositions would be as shown in red, i.e., front still covered by outposts with local reserves artillery and General Reserve at their various posts.

MAP B.

April 1905.

TACTICAL SCHEME COMPETITION.

A civilised Southern country (**RED**) in alliance with a semi-civilised country (**GREEN**) is at war with a civilised Northern country (**BLUE**). Red army is operating from the South, Northwards; **BLUE** Army is operating from the North, Southwards. The territory of **GREEN**, a portion of which is represented by the map, lies between the frontiers of **RED** and **BLUE**. **GREEN'S** Capital (**NIRMAND**) is situated 12 miles South of **NAHUN** (F. 4). **RED'S** main forces are 28 miles due North of **NAHUN**, where they are beginning to occupy a defensive position, in order to cover **GREEN'S** capital. Before this position **BLUE** is concentrating in considerably superior numbers. **RED'S** communications run South by a single cart road along the **KARPAN** river, through **NAHUN** and **NIRMAND**.

You are given the command of—

- One Brigade of Infantry,
- One Field Battery,
- Two Mountain Batteries,
- Two squadrons of Cavalry,

which is all that can be spared from the main defensive position, and you are ordered to cover **RED'S** rear and communications, against a diversion which **BLUE** Commander may very likely attempt from the direction of **PLACH** (N. of A₁) or **CHUWAI** (W. of A₃). You will be assisted by some of the **GREEN** forces, amounting to about 1,200 Infantry, 200 or 300 Irregular Horsemen, one Mountain Battery and one or two field batteries with very indifferently trained gunners. These latter troops (**GREEN**) are not directly under your orders. You can expect no assistance from the line of communication troops, every available man having been brought to the front to take part in the impending battle.

The road from **CHUWAI** over the **KASHNERA PINDA** Pass (B. 3) and on to **NAHUN** *via* **BADAL** (E. 3) is traversable by wheeled vehicles.

The road from **PLACH** over the **BAJKANDA** Pass (C. 1) as far as **LANJ** (E. 3) is traversable by pack animals, but not by wheeled vehicles.

The path from the **KASHNERA PINDA** Pass *via* **DEWRI DHAR** (E. 4) is only traversable by infantry and by mules with difficulty.

There is no cross-country communication between these roads, or between them and the position of the **RED** main army.

You arrive with your force in the vicinity of **NAHUN** on the evening of the 21st February.

Required—

1. An appreciation of your situation.
2. The disposition of your troops on the 22nd February, and the proposals for co-operation which you would make to the **O. C. GREEN** troops.

On the evening of 22nd February you are informed by the General Officer Commanding **RED** Army that he anticipates being attacked by **BLUE** within the next day or two. At 6 A.M. on 23rd February you receive at your headquarters a report that the enemy is advancing against the **KASHNERA PINDA** Pass in considerable force, actual strength not yet ascertainable, and almost immediately afterwards, information reaches you that a hostile force is moving up the **BAJKANDA** Pass.

3. Issue your orders.

Intending competitors should forward their names to the Secretary of the Institution, together with the sum of Rs. 1 when they will receive a copy of the map to which the scheme relates, together with all instructions.

This competition will close on 1st September 1905. Submissions received after that date will be treated as "LATR" for adjudication.

NOTICE.

United Service Institution of New South Wales PRIZE ESSAY, 1905.

The Council has approved of the following subject for the Prize Essay, 1905:—

SUBJECT.

"The best method of promoting the Military Education of the Officers of the Defence Force."

CONDITIONS.

The Council will present a Gold Medal and a prize of 5 Guineas for the best Essay under the following conditions:—

1. The Candidates must be members of the Institution or persons eligible to become Members.

(NOTE.—All Officers holding His Majesty's Commission, whether Imperial or Colonial, are eligible to become Members.)

2. The Essays must not exceed 30 pages (exclusive of Tables), of the size and style of the "Journal", each page averaging 540 words.
3. When a reference is made to any work, the title of such work to be quoted.
4. The Essays must be received by the Secretary on or before the 1st November 1905.
5. The Essays must be strictly anonymous, but each to have a motto, and to be accompanied by a sealed envelope, with the motto written on the outside, and the name of the candidate inside.
6. The Essays will be submitted for decision to three Referees chosen by the Council, but no awards will be made by them in favour of any Essay which does not, in their opinion, attain a sufficient standard of excellence.
7. The award of the Referees will be made known, and the medal presented to the successful candidate (or his representative) at the Annual General Meeting, and his Essay will be printed in the "Journal".
8. The Council shall be entitled to print any of the Essays submitted.

MacGregor Memorial Silver Medallists.

- 1889.....BELL, Col. M. S., V.C., R.E. (specially awarded a gold medal).
- 1890.....YOUNGHUSBAND, Capt. F. E., K. Dn. Gds.
- 1891.....SAWYER, Maj. H. A., 45th Sikhs.
RAMZAN KHAN, Havildar, 3rd Sikhs.
- 1892.....VAUGHAN, Capt. H. B., 7th Bengal Infantry.
JAGGAT SINGH, Havildar, 19th P. I.
- 1893.....BOWER, Capt. H., 17th Bengal Cavalry (specially awarded a gold medal).
FAZALDAD KHAN, Dafadar, 17th B. C.
- 1894.....O'SULLIVAN, Maj. G. H. W., R.E.
MULL SINGH, Sowar, 6th B. C.
- 1895.....DAVIES, Capt. H. R., Oxfordshire L. I.
GUNGA DYAL SINGH, Havildar, 2nd Rajputs.
- 1896.....COCKERILL, Lieut. G. K., 28th Punjab Infantry.
GHULAM NABI, Sepoy, Q. O. Corps of Guides.
- 1897.....SWAYNE, Capt. E. J. E., 16th Rajput Infantry.
SHAHZAD MIR, Dafadar, 11th B. L.
- 1898.....WALKER, Capt. H. B., Duke of Cornwall's L. I.
ADAM KHAN, Havildar, Q. O. Corps of Guides.
- 1899.....DOUGLAS, Capt. J. A., 2nd B. L.
Mina Din, Naik, Bengal S. and M.
- 1900.....WINGATE, Capt. A. W. S., 14th B. L.
GURBIT SINGH, Havildar, 45th Sikhs.
- 1901.....BURTON, Major E. B., 17th B. L.
BUNDEEN SINGH, Colr. Havildar, 31st Burma Infantry.
- 1902.....REV. Captain M. R. E., 7th Rajput Infantry.
TULSI BHANDARI, Havildar, 9th Gurkha Rifles.
- 1903.....MAMFOLD, Lieut.-Col. C. C., I.M.S.
GURJAN KUTIAM, Lance-Dafadar, Q. O. Corps of Guides.
- 1904.....FRANKS, Captain L. D., R.G.A.
MOCHAL BAZ, Dafadar, Q. O. Corps of Guides.

United Service Institution of India.

Prize Essay Gold Medallists.

- 1872.....ROBERTS, Lieut.-Col. F. S., V.C., C.B., R.A.
 1873.....COLQUHOUN, Capt. J. A. S., R.A.
 1874.....COLQUHOUN, Capt. J. A. S., R.A.
 1879.....ST. JOHN, Maj. O. B. C., R.E.
 1880.....BARROW, Lieut. E. G., 7th Bengal Infantry.
 1882.....MASON, Lieut. A. H., R.E.
 1883.....COLLEN, Maj. E. H. H., S.C.
 1884.....BARROW, Capt. E. G., 7th Bengal Infantry.
 1887.....YATE, Lieut. A. C., 27th Baluch Infantry.
 1888.....MAUDE, Capt. F. N., R.E.
 YOUNG, Maj. G. F., 24th P. I. (specially awarded a silver medal).
 1889.....DUFF, Capt. B., 9th Bengal Infantry.
 1890.....MAGUIRE, Capt. C. M., 2nd Cav., Hyderabad Contingent.
 1891.....CARDEW, Lieut. F. G., 10th Bengal Lancers.
 1893.....BULLOCK, Maj. G. M., Devonshire Regt.
 1894.....CARTER, Capt. F. C., Northumberland Fusiliers.
 1895.....NEVILLE, Lieut.-Col. J. P. C., 14th Bengal Lancers.
 1896.....BINGLEY, Capt. A. H., 7th Bengal Infantry.
 1897.....NAPIER, Capt. G. S. F., Oxfordshire L. I.
 1898.....MULLALY, Maj. H., R.E.
 CLAY, Capt. C. H., 43rd Gurkha Rifles (specially awarded a silver medal).
 1899.....NEVILLE, Col. J. P. C., S.C.
 1900.....THUILLIER, Capt. H. F., R.E.
 LUBBOCK, Capt. G., R.E. (specially awarded a silver medal).
 1901.....RANKEN, Lieut.-Col. G. P., 46th Punjab Infantry.
 1902.....TURNER, Capt. H. H. F., 2nd Bengal Lancers.
 1903.....HAMILTON, Maj. W. G., D.S.O., Norfolk Regt.
 BOND, Capt. R. F. G., R.E. (specially awarded a silver medal).
 1904.....MACMUNN, Maj. G. F., D.S.O., R.F.A.

EXTRACTS FROM LETTERS AND NOTES
MADE DURING AND SINCE THE SIEGE
OF DELHI IN 1857.*

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BY

*Colonel Charles Reid, C.B., Aide-de-Camp to the Queen,
Commandant of Her Majesty's Sirmoor Rifles.*

About noon on the 14th May 1857, I received an express from Head Quarters directing me to march with my regiment, the Sirmoor Battalion, to Meerut to aid the Europeans at that station in suppressing the mutiny of the native troops. My orders were issued immediately, and four hours after receipt of Commander-in-Chief's orders the regiment was on the move. Waiting for the carriage for the conveyance of tents and baggage was out of the question, so we marched out of Deyrah with just what we could carry on our backs. I had previously heard from Major (now Colonel) Baird Smith at Roorkee, that in the event of my being ordered to Meerut he would suggest my taking the canal route, and that he would have 50 boats ready for me. As Meerut was ten long marches which at the season of the year I would not have done in less than four or five days and at the end of which my men would have been quite exhausted and unfit for hard work, I at once determined on taking the canal route, thinking I should reach Meerut in three days from the time of leaving Deyrah, and with the advantage of having my men perfectly fresh and ready for work on landing. I accordingly marched to Roorkee, making Kheeree, twenty-eight miles, my first march, ten miles of which was over the stony "Mohan Pass," on the morning of the 15th May. At Kheeree I heard from Baird Smith of the mutiny of the Sappers at Meerut, and the probability of an outbreak amongst the Sappers left at Roorkee. Up to that time, they had not openly broken out, although they had refused to obey orders. He begged of me to hasten on, and that in the meantime he would get all the ladies and Europeans into the workshop, which could be defended. I marched immediately after receipt of this communication, and early on the morning of the 16th, after a long and tedious march, reached Roorkee. When within 3 miles of the place I received a note from Baird Smith begging of me not to march on farther in the direction of the station of Roorkee, as my movements were watched by the

* Contributed by Major R. H. Ewart, D.S.O.

Sappers and that ere I could reach the place, the mischief would have been done: that up to that time the Sappers were quiet but that their suspicions were raised by my movements, and he thought it best to show them they were still trusted, and that if I moved off quietly in the direction of where my boats were, that nothing would be thought of the appearance of my Goorkhas at Roorkee. He was right beyond doubts, and his good judgment and forethought may have been, indeed I feel pretty sure was, the means of saving the place and the lives of the ladies and children. I deemed it necessary to make it appear that I had lost my way in the dark, and that I did not intend to go to the Roorkee station, but to the canal bridge where my boats were ready for me. I accordingly told the messenger who brought the note to get me a guide from the nearest village to take me to the canal.

My move to the bridge instead of in the direction of the station of Roorkee, was, of course, communicated to the Sappers, and happily all went well. Owing to the great exertions of Baird Smith, I found the boats all ready for me, but ere we stepped on board it was necessary to give my men time to get something to eat. Whilst thus employed, I saw several of the Sappers who had come from Roorkee to see what we were about, moving backwards and forwards, amongst my men, and talking in an earnest manner to them; some of them passed close to me with an insolent look and an air of defiance. I called one or two of them back, after they had swaggered past me, and asked them whether it was not customary to salute an officer in uniform. After looking at one another, they saluted me and said, they had forgotten to do so. Presently I saw a large number of them talking to my Goorkhas. I took no notice at the time, but as soon as they moved on, I called up a couple of my men and asked them what the Sappers had said to them. One little fellow replied, "they wanted to know if we were going to Meerut to eat the atta, sent up specially for the Goorkhas by the Governor General; that the atta was nothing but ground bullocks bones." "And what was your reply?" "I said the regiment was going wherever it was ordered, we obey the bugle call." About 9 o'clock we embarked and away we went down the Great Ganges Canal at the rate of about 5 miles an hour, but I found it necessary to sound the halt every now and then to enable the boats to close up, a necessary precaution, as the whole country was up in arms against us. About sunset as we were getting the boats through one

of the locks, the line of skirmishers which I had out on the right bank, reported a party of "red coats." These turned out to be a party of the 29th Native Infantry, who had just been relieved from the Treasury duty at Saharanpur. I had no reasons to believe that they had mutinied, or that the regiment was in any way disaffected, but immediately they saw my men, the party halted and commenced loading their muskets. This looked suspicious, so I at once ordered the leading company to jump out of their boats and to load. Before they could get out, a native officer of the party of the 29th Native Infantry came forward and said he wished to speak to me. I went forward and found him most respectful in his manner. He told me that he and his party had just been relieved from duty at Saharanpur, and that they were on their way to Moradabad to join the Head Quarters of the regiment. I remarked that they had a good deal of baggage with them, seeing some 8 or 10 camels laden which I made sure was all *loot* (plunder). I asked him what made his men load, to which he replied that they had got frightened on seeing the regiment. "Well," I said, "I hope you and your regiment are all right; bring up your men and proceed along the road, and as you pass me carry arms." I then went back to the Regiment, and told them to get into their boats again, being anxious to show the men of the 29th Native Infantry that I trusted them and considered them and their regiment to be loyal. The Native Officer did what he could but the men evidently thought I was laying a trap for them, and all of a sudden they took to their heels. Feeling sure that what they did was from sheer fright, I did not pursue them, nor did I allow a shot to be fired. Two days after I heard that the Regiment was loyal and had put down one or two disturbances in the Moradabad District. As we could not proceed in our boats at night owing to falls of the canal, and the difficulty even during the day of getting into the lock channels, I disembarked for the night, and after taking our dinner we lay down to rest on the canal bank. The next day the 17th May, I found great difficulty in keeping my boats together, and did not make as much progress as I thought I should have done. About noon we came across a number of the Sappers, who had mutinied at Meerut, but they would not allow my skirmishers to get near them. The whole country being up in arms against us, I had the greatest difficulty in procuring the supplies from the villages, and in many cases at the bayonet point. Again we made our bed on the canal bank, but sleeping was out of the question, owing to

the uproar on all sides. The Goojars were of course at their old game of plundering, and the firing and shouting that went on around, coupled with the great heat, rendered it impossible to get anything like a wink of sleep.

A number of officers who were on leave at Mussoorie, and who had been ordered down to join their regiments, overtook me on the road to Roorkee so that we had a very jolly party and a noisy one too, but as there was tumult on all sides it did not much signify. On the 18th May at 5 P.M. I reached Nanoo opposite the station of Meerut; I was met by an officer of the canal department, whom I was glad to see at his post, though the whole of his establishment had deserted him. He gave me a letter from General Hewitt, Commanding Meerut Division, the purport of which was to push on as fast as possible to Bulandshahr, and if possible to save the treasure at that place, which a company of the 9th Native Infantry had charge of. The 9th Regiment he mentioned was still loyal but he had reasons to think that they would not remain so long. 200 of the Gwalior Cavalry were to join me at Bulandshahr, and the treasure, if possible, might be sent under escort of the cavalry to Meerut. It was too late to proceed further that night, so I took up my ground on the left bank of the canal for the night. The next morning, the 19th May, two or three of my Native Officers came up and reported that one of the Sappers from Meerut (out of the few who remained when the regiment mutinied) had been with the regiment during the whole night, and had been telling the men that they were going to Meerut, and on arrival that the regiment would be placed in the Dum-dummer with the 60th Rifles on one side and the Artillery on the other, and that they would be cut to pieces. I told them that I was pleased to hear from them all that went on, and that their conduct was praiseworthy in reporting all such matters. The regiment was drawn up at the time in line preparatory to embarking, but the men who had the slightest idea, did not know whether they were going to Meerut, or not. I gave the orders "pass by files to the rear and jump into your boats." The canal officer, Mr. Parker, told me that he had thought we should find the canal locks destroyed, and that we should experience a great difficulty in getting through the lock channels. The people, he said were all in open rebellion, and had refused to give him any assistance in the protection of the canal property, but the sight of the regiment at different chowkees would have a wonderful effect, and he hoped that order would be restored. Mr. Parker was armed to the teeth.

and well he might be, for he told me he had had to fly for his life on several occasions since the mutiny broke out at Meerut. As we passed down the canal, crowds of natives were to be seen on the bridges, which we came to every three miles. All were armed but after looking to see who we were, and what we were about they moved off.

On the 20th we came to the Bhola Locks which we found completely destroyed, the whole of the working apparatus was gone and we found we could not move the flood gates. The station house was in ruins and the whole of the Government property had been plundered. A search in the adjacent village I immediately ordered, being determined to make a few examples of these gentlemen. I sent a company off in the first instance to search the village Bhola. The people all turned out armed and on being asked to give them up, they positively refused and some advanced towards my men. The Quarter Master Sergeant whom I had sent with the company, and to whom I had given instructions, on seeing the men advance with their arms, ordered the leading section of the company to fire a volley. This at once settled the matter—down went the arms, and off went the villagers. A search was then made and prisoners taken in whose houses the Government property was found.

Demi-official—Extracts of a letter addressed to the Quarter Master General of the Army, dated Bhola Locks, Ganges Canal, 21st May 1857.

Here I am making the best of my way to Bulandshahr. I left Dehra at 4 P.M. the 14th instant (four hours after the receipt of your express dated 12th instant) reached Kheeree, 28 miles, at daybreak on the 15th instant; pushed on to Kookee, arrived at daybreak on the 16th instant. Here I found boats ready for my regiment; embarked at 9 A.M., but did not reach Nanoo before 5 P.M. on the 18th. Great delay in getting through the locks, and detained owing to the difficulty in keeping the fleet of boats (45 in number) together which was a wise precaution, as I came across two or three parties of rebels, who would not however allow me to get near them. Gojars plundering and burning villages in all directions. I received instructions when opposite Meerut to continue progress by canal to Bulandshahr, and if possible to save the treasure at that place. I reached this place (Bhola) yesterday at 9 A.M. found the whole of the working

apparatus gone, and the locks very much injured; the flood gate chains, ropes, etc., had all been plundered by the villagers on the canal banks. Most of the chains iron bolts, and also miles and miles of electric telegraph wire found in the village of Bhola, took 18 prisoners, in whose houses Government property was found. Burnt the village. The prisoners will be tried by drumhead court martial this evening, and if found guilty I shall shoot them. My men were working hard at the locks all yesterday, and again to-day rigging up an apparatus for forcing the flood gates open. Fortunately I have two of the canal men with me (Walker and Parker), and they are indefatigable in their exertions, we hope to get all the boats through the lock by tomorrow morning. The damage done at this lock alone is estimated at Rs. 3,000. We fully expect to find the next lock in the same state. The rebels have a small post at "Moradnuggar," I am not far from there so I shall pay them a visit. They are also supposed to have two guns, and a small detachment at "Shadaree," Waterfield writes me "Sadarah," he means I should imagine, on the left bank of the Jumna.

The Commander-in-Chief, I hear, is to be at Karnaul to-day. Delhi I fancy he will reach, about the 23rd instant. Waterfield, the Deputy Assistant Adjutant General at Meerut, writes that I may have to move to Ghazee-ud-din-nuggar on the Hindum to prevent the rebels escaping from Delhi into the Doab. All I require, is information. Meerut people send me none. At this present moment I do not know how many regiments have mutinied. Send me intelligence on receipt of this letter. My little fellows are in capital order, grinding their teeth again to get at the rebels.

May 22nd.—13 out of 18 prisoners were found guilty, and I had them shot last evening by my men, 5 out of the 13 were Brahmans. I left copies of Governor-General's order proclaiming martial law on the trees near the dead bodies. This will have a good effect I think. I have got all my boats through the lock, and pushed on to Bulandshahr at once. Please pay the messenger Rs. 50, and send him back with all the information you can give me.

Ganges Canal, May 27th.—I was proceeding with my fleet of boats in column (three abreast) with two companies in extended order on either bank of the canal, when the "alarm" was given by the leading skirmishers on the right bank, I sounded the "halt" and made arrangements for disembarking; but before I could do so my skirmishers became engaged. The rebels seeing that I was prepared for them, made off after firing a few

shots. They were all villagers, no sepoys I think amongst them. My men followed them until they were called back by bugle. On 24th May, at daybreak, I landed my regiment at one of the canal stations opposite Bulandshahr, and marched into the place, which I found completely destroyed. The treasure was gone; the company of the 9th Native Infantry having walked off with it to Delhi three days before. The civilians had been driven out, and had flown to Meerut and there was not a human being to be seen in what had been the civil station of Bulandshahr. As I expected the rebels to pay me a visit in force, I selected a good position and set to work to entrench myself, shortly after my arrival some of the native officials made their appearance. I directed them to send men round to the different villages, and to inform the people that martial law was in force, that I had made a few examples and intend to make a few more; that they had better produce the electric telegraph wire which had been removed the whole way between Bulandshahr and Meerut; and last but not least, that a gallows was to be erected immediately in front of my intrenchments. It was amusing to see the look the native officials gave me. They saw, however, that I was in earnest and by 12 o'clock the gallows was erected. Supplies were brought in, and a couple of tents produced which we were much in need of. I wrote off to the General at Meerut reporting my arrival, and requested him to send the civil officers back to their posts as soon as possible. About an hour after my arrival my pickets reported that a body of cavalry was advancing. They turned out to be 400 of the Rampur Horse commanded by the Nawab of Rampur at the instigation of the Com-
missioner, Mr. Greathed, I saw at once by the look of these men that they were rather shaky. Their leader, an Afghan, refused to obey my orders on which I ordered him out of the place, and told him the sooner he marched the better. He afterwards sent one of his officers to say that he begged forgiveness and that he would do everything he was ordered; that I was his lord and master and being anxious to get rid of them I ordered a couple of hundred of them to detach themselves along the Aligarh and Meerut roads in order to keep the communications open. All was quiet; by evening large supply of provisions were brought in and the natives were civil. If we could only have got a carriage we might have taken a drive on the coast by way of restoring confidence. Mr. Septon, Collector and Magistrate, and his assistant arrived the next day. As martial law was in force he asked my permission to resume his functions. The first

he asked was "might he collect revenues." "Oh, yes," I replied "and make the rascals pay double for all the mischief they have done." His Zilla seal the only thing that could be found near his "Kutchery" had been brought to me. This I gave up and he and his assistant resumed functions.

Demi-official (urgent) to the Deputy Assistant Adjutant General, Meerut, dated Bulandshahr, the 27th May 1857.

All quiet here. No dak in as yet from Meerut. I have, I think, opened up the communications. I have 20 sowars at Haupar, and the same number at "Gowlontee." A number of the Irregular Cavalry men who were on furlough in this neighbourhood have joined me, and I am making use of them. I require an officer to command them; have not heard anything of the force assembling at Hathras. I have written to the officer commanding; I have sent off a party of the Rampur Horse to keep open the communication between this and Aligarh. I searched the village "Chandpur" this morning and found miles of electric telegraphic wire and posts, buggies and horses, and other property of the civil authorities of this place, burnt the village, took six prisoners in whose houses Government property was found, just about to try them by drumhead court martial, if convicted I shall hang them. Arms taken in heaps; have not heard as yet what the Rampur Horse have done at "Dadree" and Secunderabad, last letter received from you dated 25th, 6-30 P.M. Send me information regarding the movements of the Commander-in-Chief, and all you can collect anent the mutineers.

Demi-official (urgent) to the Deputy Assistant Adjutant General, Meerut, dated Bulandshahr, the 26th May 1857.

MY DEAR WATERFIELD,—All quiet and confidence restored. Hanged the head man of the village of "Chandpur" and two other rascals, in whose houses Government property was found. Have opened communication with Meerut, I hope also with Aligarh. The "Goojars" said to be in force at "Dadree" and Kuthara-Bishen Singh their Commander-in-Chief. The Rampur Horse not to be trusted I am watching them. Electric telegraph wire I hope to have repaired in a day or two. I require wire and posts. Send from Meerut please. Write often and let me know what letters you received from me, dates, etc. My "Goorkhas" in good spirits and eager for action. I am in communication with Messrs. Harvey and Vansittart at Agra. I have

forwarded several communications from the Governor General to the Lieutenant-Governor, also to the Punjab Government. I hope that they have reached. Affairs below are no better than in the North-West. Troops are expected in Calcutta shortly.

*Demi-official (urgent) dated Bulandshahr, the 29th
May 1857.*

MY DEAR WATERFIELD,—The Rampur Horse mutinied last evening. Have sent them to the right about. I was just about to attack them in their camp, when I was informed they had taken to their heels, they have gone to Delhi, I imagine a good riddance, I could have done more in this district had it not been for them. I had to watch them from the first. Why were they sent here? A great mistake.

*Demi-official (urgent) dated Bulandshahr, the 30th
May 1857.*

MY DEAR WATERFIELD,—I have made over the Irregular Cavalry to Captain Tyrwhitt. Brigadier Wilson writes me that he is hard up for troops at the Hindum. He has only one wing of a regiment of infantry. He tells me that the Commander-in-Chief had ordered that I should take up a position on the Hindum, with my own regiment, 400 cavalry, and four horse artillery guns. This order has not as yet reached me. Brigadier Wilson is very anxious that I should join him. He leaves the matter to my own discretion. All is quiet and Tyrwhitt can keep open the communication, I shall therefore march this evening for Brigadier Wilson's camp. I do this on my own responsibility. I hope the General will approve. I am only anticipating the Commander-in-Chief's order, by so doing I may be of service to Brigadier Wilson, who evidently thinks he is not strong enough for the mutineers at Delhi, who will attack to a certainty. Left Bulandshahr at 6 P.M., on the 30th May; heat frightful, we marched 27 miles along the left bank of the canal, men dead beat; hot wind blowing all night. Bivouacked under a few thin baubul trees at 11 A.M. on the 31st. Resumed march at sunset, and marching the whole night and until 10 A.M. on the 1st June, I at length reached Brigadier Wilson's camp. Whole country under

water in consequence of the damage done by the rebels to the canal bunds and escape channels. I had the greatest difficulty in getting along, my little men at times almost swimming, the hot sun overhead, and the glare from the water was something fearful. I found Brigadier Wilson as I expected, in rather an awkward predicament. He had a fight on the 30th, and another on the 31st. He had taken five guns in his first fight, but in his second he had a great difficulty in driving the rebels back, and had not succeeded in taking any of their guns. His troops have behaved most nobly but they were knocked down by the sun and were completely exhausted; so much so that Brigadier Wilson quite dreaded another attack, which he was evidently expecting. He was rejoiced at my having joined him so soon he had not received any of my notes, and was taken quite by surprise. I was, of course, taken for an enemy advancing in his rear. The whole force turned out and cheered the regiment into camp but my poor little fellows were so dead beat they could not return the hearty cheers with which they were welcomed. "Get something to eat sharp" said the Brigadier "as we have to turn out." Exhausted as my men were, I certainly was not anxious for a fight, and was thankful the mutineers left us alone that day. On the 2nd June I was ordered by the Brigadier to take my own regiment and two companies of the 60th Royal Rifles in extended order, my own regiment in support, but I had not gone far before I discovered that the village had been vacated. I had to destroy the place, so after knocking the walls of the houses down, which I soon effected by the aid of a dozen elephants, I set fire to the grass roofs. The heat of the sun was fearful, to which was added the heat of the fire, and the hot wind which came in fiery blasts through the high flames can be better imagined than described. No blasts of a furnace could have been hotter. Yet all worked cheerfully and my work was over in three hours. On the 3rd June we got tents for the regiment from Meerut which we were much in need of having been without them since leaving Deyrah. The men being accustomed to a cold climate feel the heat as much as Europeans, but they look well and jolly. We thought we should have been attacked but we remained unmolested. Left Ghazee-ud-din-nuggar at 4 P.M. on the 4th June, to join the Commander-in-Chief's Camp at Allipore. I had in command of the rear guard, two squadrons Carbineers, four horse artillery guns, and my own regiment. Great delay in getting the camels and carts over the Hindum bridge.

all over by 12 o'clock at night. Bridge destroyed by engineers. Marched all night. Halts every half hour to admit of the baggage closing in. Did not reach the camp until 4-30 P.M. on the 5th June. Men under arms and marching for twenty-four and-a-half hours. Encamped at Makree for two hours and-a-half only. Resumed march and reached the bridge-of-boats at Ragput at daybreak on the 6th June. Left Ragput at 2 A.M., and reached Allipore on the 7th June about 9 A.M. Here we joined under Sir H. Barnard. Marched into the camp, but not a cheer for us, on the contrary all looked upon the Goorkhas with an eye of suspicion, which was very discouraging, after what my little fellows had already done. I was not questioned myself but several of my officers whether they thought the Goorkhas were to be trusted; when I was told of this, I said, "time will show." "Shooting Brahmans," I said, "was a pretty good test." I must not forget to mention that two of the three men I hanged at Hulandshahr were Brahmans, and strange to say, both of their ropes broke. No sooner had their feet touched the ground than I ordered (I had a company drawn up in front of the gallows) "two files to the front-quick march-ready-present." The men fired just as if they had been firing at a target on a parade. Over went the two Brahmans, dead. My strict discipline has told well. I have merely to give an order and am obeyed immediately. We attack the mutineers at Badli-ki-sarai, tomorrow morning.

Extracts from letter written from the Main Picquet Hindoo Rao's House.

Hindoo Rao's House, June 8th, 1857.—Left Allipore at 1 A.M., found the enemy in force in a very large strong position about 7 miles from Delhi Badli-ki-sarai. After about two hours fighting we attacked their position, and pursued them until they got behind the strong walls of Delhi. Captured 13 guns, and gave them a sound good thrashing. About 1 P.M. we reached the Bridge when I was directed by General Sir Barnard to occupy Hindoo Rao's House which is within 1,200 yards of the Mores Bastion. Had just made ourselves comfortable when the "alarm" was sounded. In ten minutes the mutineers were seen coming up towards Hindoo Rao's House in force. I went out with my own regiment and two companies of Rifles and drove them into the city. This, however, was not accomplished till 5 P.M., so that we were under arms for sixteen hours. Heat fearful. My little fellows behaved splendidly and were cheered

by European regiments. It was the only native regiment with the force and I may say every eye was upon it. The General was anxious to see what the Goorkhas could do, and if we were to be trusted. They had (because it was a native regiment) doubts about us, but I think they are now satisfied. Hindoo Rao's House was the key of the position we had taken up before Delhi, and which the enemy were not long in discovering; they tried their utmost to drive me out the first day and it became ever after the object of almost every attack. I felt highly honoured in being selected for the command of this, and expressed my thanks to the General, who afterwards was pleased to entrust me with the command of all the posts on and off the Ridge including the Main Picquet "Observatory," "Sammy House," "Crows nest" and Sabzeemandi, and which I had the good fortune to hold till the 14th September 1857. On the 8th June I had my own regiment (never more than 400 strong, including all grades), two companies of the 60th Royal Rifles and light guns. About noon on the 9th June I was reinforced by the gallant Corps of Guides, which arrived in camp a few hours before they were sent up to me, after making the most wonderful march down from the Punjab. They were all ready, they told me for work, and by 2 P.M. they were hotly engaged, and I saw at once what an acquisition they were to my small force. The corps is composed of Seikhs and Punjabis, and they have a company of Goorkhas 100 strong. Most of the latter tribe were enlisted by me for the Regiment at Batoragarh in 1852, but at the end of the siege they had not more than 15 or 20 left. Whenever I sounded the alarm, which indicated an attack on my own position the General sent me up from Camp two more companies of the 60th Royal Rifles as a support. "My own regiment and company of the Rifles occupied the house, and one company of the Rifles the Observatory, where a battery for three guns was constructed on the night of the 9th, to reply to the "Cashmere Bastion." The centre battery of 18-pounders was close to the house, and the guns were all laid for the "Moree Bastion." The two companies of the Guides were in and behind the outhouses, and the 60th Royal Rifles were at first relieved daily, but this I found objectionable as it often so happened that I was attacked just after the relief took place, and after I had made my disposition for the defence of the right flank, I accordingly made arrangements with the General for their relief once a week, which pleased the officers and men too. I longed to have the whole corps.

under my command, but this could not be. My time, when we were not fighting was fully occupied in watching the movements of the enemy, which will I trust be sufficient evidence for the brief account given of each action in the following extracts. The few lines were always written under great difficulties, for it must be borne in mind that we were under the fire of the enemy's heavy bastions morning, noon and night from first to last.

June 9th.—We got two heavy guns in position this morning, when we were able to reply to the "Moree Bastion." Two more guns opened at 1 P.M. At 2 P.M. we were again attacked. The whole of the Guides Infantry which arrived today were sent up to strengthen the Picquet, and a support of 200 of the 60th Rifles. We met the scoundrels coming up the road. I threw out skirmishers on the right and left, and allowed them to approach. Were fighting until 4 P.M., when the enemy retreated with heavy loss. A fine large verandah on the east side of Hindoo Rao's house was knocked to pieces during the day; the practice was first-rate from the Moree and a 24-pounder shot soon battered it down.

June 10th.—Another engagement this afternoon; the mutineers came out in force with guns and cavalry. I turned out the Main Picquet, 7 companies of my own regiment, 2 companies of Rifles, 2 guns of Major Scott's Battery, and 150 of the Guides Infantry. I took up a good position and waited until our friends came close up, the Guides I extended in skirmishing order in front, the Rifles extended on my left flank; guns in the centre, supported by 7 companies of my own regiment. The skirmishers soon became engaged. The enemy opened their 9-pounder guns on my right and it became necessary to strengthen the line of skirmishers, which I did by throwing forward a company of Goorkhas in continuation of first line. Whilst my men were advancing, the mutineers called out "Come on, Goorkhas, we won't fire upon you, we expect you to join us." "Oh yes" was the reply, "we are coming." They closed upon their centre, and within 20 paces they gave the mutineers a well directed volley, killing some 30 or 40 of the scoundrels. The scrimmage lasted until 7-30 P.M., when the enemy thought they had enough of it, and withdrew. My loss this evening in my own regiment 3 killed and 10 wounded, the Guides 3 killed and 3 wounded, 3 horses killed in Scott's Battery and 5 wounded. The Rifles did not lose a man; I kept them as much under

cover as possible. We were out at 4 A.M. and did not get back to the Main Picquet (Hindoo Rao's House) until 4 P.M. Poor Quintin Battye was killed on the evening of the 9th, a sad loss. He was a first-rate soldier.

June 11th.—A day of comparative rest, no enemy appeared. The Moree, Cashmere, Burn and River Bastions kept up a constant fire upon the Picquet and the houses suffered a good deal. The ammunition for the centre and left batteries was stored away in the right wing of Hindoo Rao's House. This we found rather a difficult matter under the heavy fire of the enemy, which was kept up the whole day. Earth was thrown over the roof, but I cannot say I ever thought the magazine very secure.

June 12th.—We attacked this morning. The mutineers were driven back in a very short space of time with a loss to them of about 200. About 80 or 90 of the 4th Irregular Cavalry went over to the enemy during the scrimmage. They passed close to me, but little did I think that they were going to join the mutineers. They went to the front just as if they were going to charge, but no sooner had they closed than to my horror I saw them mix up with the enemy, and walk off with them. Immediately I saw this I ordered the guns to open upon them, but the wretches were too far off, and I do not think more than half a dozen of them were killed. The enemy are mounting more guns in the Moree and Burn Bastions. We are not likely to take Delhi just at present. It is all we can do to hold our own, and our guns cannot keep down the fire from their batteries. We have ten heavy guns at this Picquet in constant play; the heat is something fearful, but the troops, thank God, are healthy.

June 13th.—We have heard this morning that two new regiments of mutineers have arrived in the city that they were being armed, and would attack us at 4 P.M. Sure enough they came making the best of their way for this position. I was all ready for them and allowed them to come up within 20 paces, when I opened with grape and musketry on all sides. I charged them with a couple of companies (one of the 60th and one of my own) over the hill. My loss 3 killed and 11 wounded, including Lieutenant Kennedy severely wounded who was a great loss to the Guides. No return of the loss in the Rifles as yet. The action was not over until 7-30 P.M. The 60th Native Infantry was one of the regiments that attacked us. They marched up the Grand trunk road in columns of sections right and front, and led the attack headed by a Sirdar Bahadur of the regiment who

made himself very conspicuous calling to his men to keep distance, as he intended to wheel to his left. They fought most desperately. The Sirdar Bahadur was killed by my orderly Lal Singh. I took the ribbon of India and sent it to my wife. The mutineers were about 5,000 strong, Infantry and Cavalry. Immediately I go out to attack, or rather to resist their attacks my men are brought under the fire of their heavy guns from the walls of Delhi. The fire of the enemy's Moree, Cashmere, and Burn Bastions is something fearful, and the wonder is any one escapes. The present strength of the Main Picquet is 4 companies of the 60th Rifles, the Sirmoor Battalion 300 strong, 300 Guides Infantry, and 3 light guns, 7 heavy guns in battery, and 2 mortars, but these give us no assistance when we are attacked. They are all laid for the Moree Bastion which has not suffered in the least, and we have done their defences no harm whatever. We have only one 24-pounder, which we took from the mutineers on the 8th, we had no shot for it, but the enemy soon made us a present of a few. We expect another attack tomorrow. I only wish the rascals would give us time to put on a clean shirt. I have not had one on for three days which is by no means pleasant in such weather as this. Obligated to be on the alert morning, noon, and night. It had been arranged that the city should be carried by a coup-de-main, and it was to have come off an hour or so before daybreak on the 13th June, but owing to the Brigadier of the day having declined to allow his picquets on the left to be withdrawn without a written order from the General (in which he was perfectly justified), the scheme for that night was abandoned. I cannot say I ever thought we should have succeeded, indeed am pretty confident it would have been a complete failure. The only chance of success would have been a surprise, but I never could allow that "Pandy" was so much off his guard as others made out. If secrecy had been preserved, until we got close up to the gates it is as much as could be expected. Say we had so far succeeded it often so happens that there is delay in proceeding farther either the men carrying powder bags are shot down or the fuses won't light readily, or the explosion is not as was anticipated. Any of these mishaps with the handful of men of which the assaulting columns were composed, with no reserve to fall back upon in case of disaster, would in my humble opinion have ended in defeat. The risk was a fearful one, the loss of India was in the balance. My part of the affair was to

have marched down the Grand Trunk Road with my own regiment not 400 strong, accompanied by two engineer officers (Lieutenants Genesty? and Fulford), and 20 sappers, blown open the Lahore Gate and made the best of my way down the Chandnee Chowk and taken up a position near the Kotwali, until joined by the other attacking column. To have accomplished this, I should have had to pass close to the left and flank faces of the Burn Bastion which at times mounted four if not five 12 and 24-pounders, besides being exposed to the fire from the loopholes. Had I succeeded in getting into the city with my 400 Goorkhas I venture to say not one of them would have reached the Kotwali in the Chandnee Chowk. We know what street fighting is and I know pretty well what amount of grape from heavy guns men can stand. I may be wrong, but my own impression is, I could not under any circumstances have succeeded with my column. Whatever the others might have done. However I had to obey the written orders I received from General Barnard. I marched down to the General's mound at 3 P.M. but after waiting for the sappers, powder, etc., for about a quarter of an hour, up rode the Quarter Master General of the Army, saying that the orders had been countermanded and begging of me to get back again to Hindoo Rao's House as quickly as possible. The 60th Rifles had been ordered down as a covering or firing party; but the object of this I could never discover, there was no breach to keep clear and little harm, I imagined, would have been done, by firing at the enemy behind the thick walls of Delhi. Twenty picked Riflemen would have sufficed for the purpose of watching the loopholes about and above the gates whilst the powder bags were being placed. But it would appear that a general attack on loopholes was intended. The only chance that men have of firing into loopholes is by getting close up to them. The closer you are the less you are exposed to direct fire of the heavy bastions. But how the 60th Rifles were to get close up to the walls of Delhi, without jumping the ditch, and being exposed to the flank fire of the heavy bastion, I could never make out. The very men who would have been all, everything with the attacking columns were thus disposed of, but thank God, the attack never took place. Hodson and a few others were very sanguine of the success of the coup-de-main, but it was in my humble opinion a mad idea. The enemy I always found on the alert at night. This I put to the test more than once, but my Goorkhas invariably returned with a shake of the head.

"Burra Hosla" (wide awake), said they with a broad grin. When our reinforcements arrived it was again proposed that the city should be taken by a coup-de-main. One column was to effect entrance by blowing in the iron grating of the canal near the Cabul Gate; another to enter the Cashmere Gate and a third to escalate the Cashmere Bastion, but owing to my having been attacked on the night of the 2nd July, it was again abandoned. My regiment was to have been attached to the first assaulting column, which must have failed as it turned out afterwards, the canal grating being commanded by the flank fire of the "Moree Bastion," and one heavy gun pointed down the dry bed of the canal along which our advance would have been. Three columns and reserve would not have mustered more than 3,000 men, (if so many), so it does not seem a matter of regret that I was attacked by the enemy that night, instead of our attacking them behind their strong defences. At this time the mutineers mustered strong, having been joined 2 days previously by the Bareilly Brigade, consisting of No. 15 horse battery (2 six pounder guns) from Saharanpur, the 8th Irregular Cavalry, 12th, 28th, 29th, and 68th Native Infantry rather a formidable reinforcement.

June 14th.—A day of rest, Sunday very kind of them, heavy batteries at work; the house is strong, but if they keep up this heavy fire, it cannot stand long.

June 15th.—I was attacked this morning with great force, some 6,000 Infantry and Cavalry. The rascals had the impudence to bring out a couple of 9-pounders. I made all my arrangements for the defence of the Picquet, and then went out with all available troops to attack the enemy as they came over the hill. I had 6 companies of my regiment, and 2 guns of Scott's Battery. I accordingly took up a position and waited for the mutineers to advance. On they came and placed a green standard on the hill, within 100 paces of me. This was more than I could stand. I gave the word "Forward," and little fellows were up like a shot and advanced in tactical order to the top of the hill. By way of bringing the enemy on, I sounded the retreat, having previously told my men what I was going to do. It had the desired effect, on came the enemy and we met just as I got over the brow of the hill. I gave them a well directed volley, and ordered my guns to open. This sent them to the right about. About 50 were killed and a number wounded. Had I been in greater force, I think I should have succeeded in capturing the enemy's guns. We are under fire morning, noon and night.

We expect the reinforcements from Umballa the day after tomorrow. We can hold our own, every attack having been repulsed at once, two of my orderlies wounded today, Hindoo Rao's House very strong but if they keep up the fire of their 24 and 32-pounders it cannot stand much longer. Heat very great; constant work and excitement keeps me in health. My little fellows are to try their best to destroy the bridge-of-boats of the Jumna. Rather a difficult matter. They have already been down to it. They say that it is well guarded, strong picquets on either sides of the River, with double sentries in each boat. I fear they will not succeed, however they will do their best.

June 16th.—No attack to-day. The enemies busy erecting heavy batteries in Kissengange. I am watching them closely.

June 17th.—About 3 P.M. a 24-pounder shot came smashing into the portico of the house which the officers occupy, killing Ensign Wheatley who was doing duty with my regiment, a havildar and 4 men, besides two carabinieri, orderlies of mine, and driver and wounding Lieutenant Tulloch and 3 of my men, one of whom (Ticca Ram) died that evening, (this little fellow was one of the best shots in the regiment. He had killed 20 tigers in the Dhoon). I was asleep when the poor fellow was wounded. 9 killed and 4 wounded by one round shot, and Regimental colour cut into two. About 3-30 I received orders from General Barnard to make simultaneous attack with Major Tombs on the enemy's position outside the city, at Kissengange and Trevel-yangange. My column consisted of 4 companies, the 60th Rifles about 180. The Sirmoor Battalion 350, one company of the Sirmoors left at Hindoo Rao's House. I met Major Tomb's column at the cross road; when he took the right and I the left, my object was to get in the rear of the heavy batteries in Kissengange which I effected by passing through two serais, battering down three strong gates which were bricked up inside, and after crossing the canal, and running down the bed of the old channel, we reached at length the gate in rear of the Kissengange Serai which I found full of mutineers. The scaling ladders carried by the sappers (20 in number under Lieutenant Jones) were converted into a battering ram, and after some little trouble we succeeded in battering down the gate. The mutineers rushed on, sword in hand, after firing their muskets, most of them appeared to be sappers who were hard at work at the batteries, 31 were killed in one place, 12 in another and at the very least

300 wounded. I destroyed their batteries and magazine after burning all the huts in the place, I withdrew and reached Hindoo Rao's House about dusk. Total killed this day 7 and 8 wounded in Sirmoors. The regimental colour was cut clean in two by the round shot which made so much havoc. The 60th Rifles in the attack on Kissengange behaved admirably, the four companies were commanded by Captain Wilton, a fine gallant officer who led his men in a manner which ensured confidence.

June 18th.—I had General Barnard with me at 9 o'clock last night. He came to thank me for the affair of the last evening, *viz.*, the attack on Kissengange. It was a complete surprise and very successful. An order of the General's, Major Tombs, and self appeared in Field Force Order of today. Another Lance-Orderly of mine killed last night, 3 mounted orderlies out of 4 were killed in 2 days, and 2 Goorkha orderlies wounded. Delhi will not be taken just at present.

June 19th.—I received a note from Captain Curzon, Military Secretary, on the subject of the bridge-of-boats. If effectually destroyed my men will receive 6,000 rupees. The little fellows are anxious to try what they can do, 15 of them start to night with combustibles. I am preparing cradles or rafts on which I propose placing gurrachs filled with carcass combustion. Two gurrachs on each raft. These will be lighted and taken off into the centre of the stream, and as the current is strong they will soon float down to the bridge of boats, but my only fear is most of them will go through the gap left at night in the centre of the bridge. The jolly little fellows start to night. Four boats are taken out at night, which form picquet boats, placed about a 100 yards above and below the bridge. I hope to see them back all safe to-morrow but I hardly think they will succeed. Notes constantly coming from General Barnard, begging of me to keep sharp look out. The idea now is, so say our spies, to make fatal struggle ere our reinforcements arrive. They talk of attacking our rear and front at the same time.

June 20th.—No attack on my position today; the Moree, Burn, and Cashmere Bastions are never silent. Each of these mount from 9 to 12 heavy guns; the Moree is 1,200 yards from Hindoo Rao's House; the Burn 1,500, the Cashmere about the same and the fire is principally directed against the house and neighbouring batteries.

June 21st.—An attack made on our rear last evening. We captured one of the enemy's guns. Officers killed, Yule

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of the Lancers, Alexander, 3rd Native Infantry, Colonel Becher, Quarter Master General, Daly, Guides, and Williams, Rifles, wounded. We had nothing to say to this affair in the rear, being employed with another in our front. Several lives were lost. My men have returned from the bridge, 5 of them missing all yesterday. They met picquet of the mutineers whilst they were shoving the rafts across the river. They were fired upon. Those who were able to dive went down like so many ducks, but the rest had to swim back. The divers, 5 of them, after some difficulty managed to get hold of the rafts again, and took them over to the left bank, where they lighted the portfires, and set the rafts adrift, but, as I feared, most of them floated down the centre, and passed through the vacant space caused by the removal of 4 boats. Two boats, however, took fire, and were with difficulty removed. However the bridge was complete this morning. I get but little rest. My telescope is hardly out of my hand during the day. The Bareilly Brigade is expected today, when I conclude they will make one struggle more. We shall probably see them on the 23rd, the anniversary of "Plassey."

June 22nd.—No attack today but tomorrow we may expect the rascals out in force. Moree very troublesome indeed, also Burn Bastion. The enemy moving in my right rear. I am watching them.

June 23rd.—I was attacked early this morning. The enemy turned out in greater force than I have ever yet seen them. Prior to leaving the city they swore on the "Gunga" and "Jumnajee" that they would spike my heavy guns before sunset, and drive me out of Hindoo Rao's House. They commenced by an attack on my right rear, having over night occupied the building in the Sabzeemandi, which we were not strong enough to hold. They had the advantage of the very best cover, the place being surrounded by the jungle, and from the tops of houses they completely commanded our right flank battery, which they were not long in taking advantage of. I soon discovered that the houses were full of batteries and it became necessary to drive them out. I accordingly directed 2 companies of the 60th Rifles, 3 of my own Regiment and 3 companies of the Guides to attack the place. They succeeded in driving the enemy out, but had not taken possession more than five minutes, when they were compelled to retire before a force some ten times their number. Immediately I saw my men retreating, I ordered the supports which were close to the building to advance. Again the enemy were driven back and I had once again, after a hard

struggle, taken possession of buildings. I wrote off to Sir H. Barnard to say I required reinforcements; this was about 11 A.M., but none could he send me until about 2 P.M., during the day I had the greatest difficulty in holding my own. The mutineers about 12 o'clock made a most desperate attack on the whole of my position. No men could have fought better. They charged the Rifles, the Guides, and my own men again and again, at one time I thought I must have lost the day. The cannonade from the city, and the heavy guns which they had brought out from the city raged fast and furious, and completely enfiladed the whole of my position. Thousands were brought against my mere handful of men but I knew the importance of my position and was determined to do my utmost to hold it until reinforcements arrived. I drove the enemy out of their position in the Sabzeemandi no less than 6 times, and at length succeeded in establishing a small force in the place. We were fighting hard until sunset, when the mutineers gave it up as a bad job, and after withdrawing their heavy and light guns with which they had playing upon us the whole time, besides being under the fire of their batteries (The Moree and Burn), they retired leaving about 800 killed and wounded on the field. The loss in my regiment in three weak companies, 36 killed and wounded of my little fellows. At this rate I shall not have many left for the attack, which is not likely to take place just at present. I was struck by a spent ball on the spine to-day, but was not much hurt. The heat was excessive, and many of our men fell from the effects of the sun. I must here mention the conduct of my friend "Buddal Tappah" Jemadar, whom I promoted for his gallant conduct. I detached him with his company on the 23rd for the purpose of driving out the mutineers who had taken possession of some buildings in the Sabzeemandi, from which they completely enfiladed the whole of my position. He found a large body of enemy in a high brick and walled enclosure, to which there was but one entrance, and the fire kept up upon it was so heavy that he found it impossible to advance through the gateway. He accordingly divided his company, placing half at the entrance and with the remaining half he proceeded to the rear half of the enclosure; here he substituted the back and shoulders of a Goorkha for a ladder, and in a wonderful short space of time he, with the men he took with him, was on the top of the wall firing down upon the enemy. The party left at the gate immediately rushed in, and 35 of the mutineers were killed at the spot, and a

great number went away wounded. This was indeed gallant and most daring achievement, especially as the company did not muster more than 40 men. This man obtained a third class order of merit for capturing a standard at All wall. He has now the second class order, and those who first scaled the wall in the novel style above described have the third class. Lieutenant Minto Elliot, of the Bengal Artillery, did admirable service with his two guns and he highly distinguished himself by a most gallant and conspicuous act of zeal and bravery, aided by a sergeant and a gunner, he worked a howitzer for several hours without relief of any sort or further assistance under a very heavy fire, which was almost incessant from the enemy's formidable Bastions, as also from the musketry fire of attacking force, his other light gun being at the time completely disabled. The coolness and daring shown on this occasion more than once attracted my notice; 7 of the horses of his battery were killed, and wounded, and he lost a good many men. On hearing me express a wish on the 10th June to have an officer permanently attached to the two light guns at the picquet, Lieutenant Elliot volunteered to remain with me, which he accordingly did until the 23rd June when he returned to camp with his disabled guns. His conspicuous gallantry on this occasion has been brought to notice, and I have recommended him for the Victoria Cross.

June 24th.—A quiet day, glad of little rest after our fight yesterday.

Coke's Regiment not to be with us until the 29th. Had a letter from General Barnard this morning about the occupation of Sabzeemandi. The old gentleman does not know where the place is. He says there is no object gained in extending our right, whereas the buildings are well in our right rear. If not held, certain it is that we must remove our right battery; indeed I much doubt, whether I shall be able to hold Hindoo Rao's House. We must work at our defences. A battery for my light guns, and breastworks are required. We cannot afford to lose men in the way we are doing. All well at the Main Picquet.

June 25th and 26th.—No attack. The Moree and Burn Bastions always at work and we lose a number of men here. Dangerous work moving from this house to the right Battery.

June 27th.—We were attacked this morning in greater force than ever. I occupied all the buildings in the Sabzeemandi, consequently did not lose near so many men as on the 24th. The enemy were somewhat astonished to find the

place occupied. I lost today 2 killed and 14 wounded, detachment of 4th Sikhs, one killed and 4 wounded, 180 of the Fusiliers which I had in the Sabzeemandi, 14 killed and wounded. No report of the 60th Rifles, or Guides Infantry. We were fighting for two hours in the rain and very heavy it was. The rains have apparently set in, but Delhi is not yet taken.

June 28th.—Our reinforcements arrived this morning, such as they are, Coke's Regiment not yet in. Moree playing upon us.

June 29th.—No attack today. Moree playing upon us as usual.

June 30th.—The rascals were at us again this morning. The engagement did not last very long. I lost 2 of my little fellows and 11 wounded.

July 1st.—The main picquet (I wish they would select some other by way of change) was again attacked about noon today, and we were fighting till sunset, but with great good luck, I only lost two of my little fellows. I decided on taking up a new position some 80 paces in front of my old one.

Stones and brushwood being at hand, I ran up a breast-work in the space of half an hour, and before the enemy could come round my flank, they found me prepared for them. I received most positive orders from Sir H. Barnard to act purely on the defensive, otherwise I should have made a rush for three of the enemy's guns, 9-pounders, which they brought out and with which they annoyed us a good deal. The 60th Rifles is truly a fine regiment, so totally different to every other. My men are fond of them, and they get on famously. We have lost about the same number of men upto this date; I have had 28 killed, 105 wounded—not to be wondered at, rascals are always at us. John Coke's Regiment will arrive tomorrow. The discipline in the 60th Rifles was perfect. I felt I could do anything with such men. My daily pencil reports, written either behind a rock or at the top of Hindoo Rao's house, recorded all that came under my observation at the time, and I was in hopes these reports, although written in pencil, would have been kept, and reference made to them when the final despatch of the siege was penned, but this I regret to say, was not done. I more than once mentioned the names of Officers of this noble Regiment, who served under my command between the 8th June and 2nd August, during which time the crisis lasted. Finding that my pencil reports were taken no notice of I sent in a supplementary despatch on the 13th February 1859, in which I mentioned the names of

Captain (Hickman?), Captain Jones, Lieutenant Paton, Lieutenant J. D. Dundas, Lieutenant J. H. Deedes, Lieutenant J. Hare, Lieutenant Ashburnham, and Lieutenant and Adjutant Kelly of the 60th Royal Rifles, who had done right good service on the Delhi Ridge, but I regret to say Lord Clyde replied, "the time is altogether past for publishing any further despatches relative to these services, which however meritorious, are now of old date." I cannot however, think that these services will be forgotten at least I hope not. I likewise mentioned the names of several Artillery Officers who had served on the Ridge with me, but they appeared in my pencil reports, which were not in an official form, though I certainly intended them as such. To have sat down daily to write long despatches on foolscap paper would have been an impossibility. I could watch the movements of the enemy and give my orders while writing pencil notes, but the official form in ink was not possible. The particular services of the Officers in the heavy batteries I left the Field officer of Artillery to mention as I could not see all that was going on in three different batteries but all that came under my observation I mentioned.

July 2nd.—The assault is to be made tomorrow morning an hour before daybreak, God grant it may be successful. The rascals just knocked over our only 24-pounder, never mind it will make no difference. Our guns are too far off to be of any use. We are replying with 18-pounders to their 24 and 32-pounders. It must be done with the bayonet after all.

I get no rest at night, but nevertheless I am quite well. If we are attacked this evening the arrangements for tomorrow will be upset; it is almost impossible to say what force the enemy have; not less I should say than 20,000 mutineers. The followers of the Prophet will of course fight, and are no doubt all armed. The 10th (my regiment) gone at last, let them all go, say I.

July 3rd, 2 P.M.—Just come in. The enemy made a night attack on my position. I acted on the defensive at first, but about daybreak I thought I might do something on the offensive. I drove them back but they got up reinforcements and were seen coming up a second time to attack me. I turned the picquet out at 1 o'clock this morning and have only just returned, so that we have been under arms for 12 hours and-a-half. Killing work. I have lost in all 138 of my little fellows killed and wounded. I have got my recruits from Dehra and furlough men.

July 4th.—On the afternoon of the 3rd July large bodies of insurgents came into the large gardens on my right rear, and it became necessary to turn out the troops in camp. At night the enemy were still in force outside the City, and a movement was made on Allipore, one march in our rear. I had to watch the enemy closely the whole night and my picquets were kept more on the alert than usual. About 2 A.M. a force marched under Major Coke to endeavour to intercept the mutineers. He had Money's troops of Artillery, Scotts Horse Battery, a squadron of the Carbineers, a squadron of the 9th Lancers, a Wing of 61st, and his own regiment, the 1st Punjab Rifles in all about 350 cavalry, 800 Infantry, and two guns. About sunrise on the 4th July the enemy were seen coming back to Delhi having plundered Allipore. Coke at once moved to take them in flank, but had to proceed on most difficult ground for Artillery, the greater portion being swampy fields. He at length, however, came up with the enemy who commenced moving off, whilst his troops were forming up, he however succeeded in taking a quantity of small arms ammunition, and all the plunder taken by the mutineers at Allipore was recaptured. Coke was unable to follow up the enemy owing to his having received strict orders not to cross the canal. On his return to Camp, whilst resting his men, he was attacked by fresh troops which had come out from Delhi to aid the retreat of the force returning from Allipore, and it became necessary to send some cavalry from camp and also some artillery to support Coke. The attack, however, was repulsed before the reinforcements reached him. Had Coke been permitted to use his own discretion he would have severely punished the enemy but his hands were tied, General Barnard having directed him on no account to cross the canal. I was attacked on the 4th but forget particulars. It appears from the returns that I lost 3 Goorkhas.

July 4th, 5th, 6th, 7th, 8th and 9th.—No letters appear to have been written. None received anyhow. My time was fully occupied in strengthening my position.

(To be continued.)

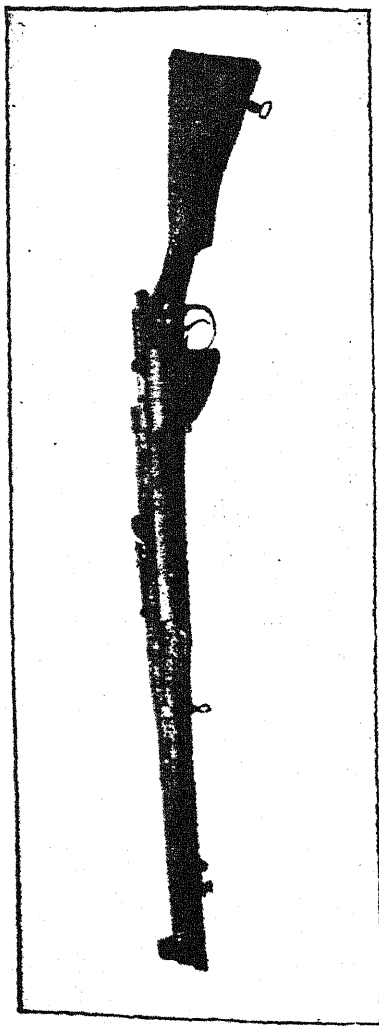
BY MAJOR W. B. WALLACE.
2nd Suffolk Regiment.

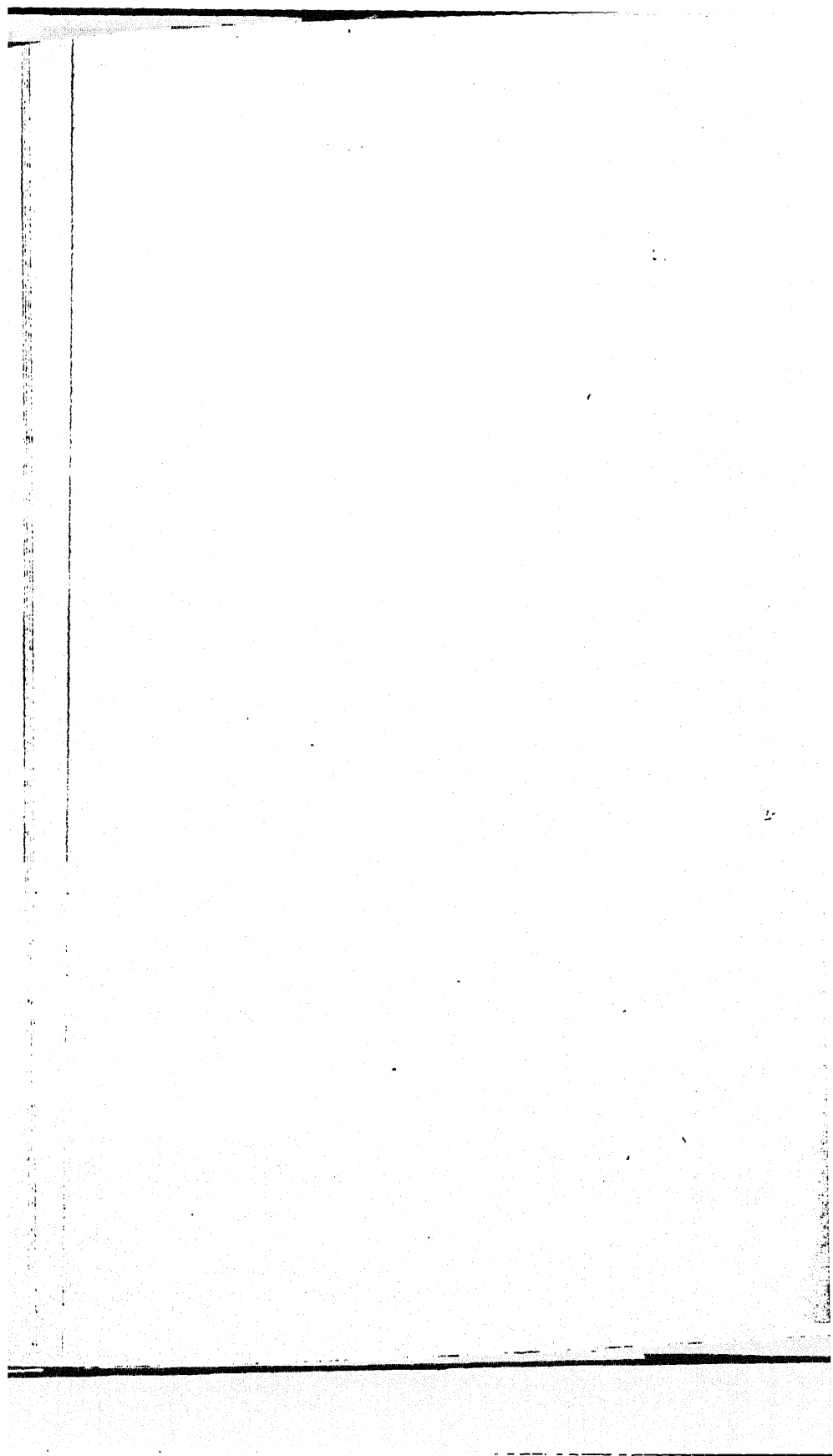
During the South African War the Small Arms Committee was instructed to submit recommendations for the improvement of the Lee-Enfield rifle. As a result of the deliberations 1,000 experimental short Lee-Enfield rifles were issued to the troops for trial. The reports of the trials were very favourable, and after a few minor improvements were effected, this pattern arm was finally approved and sealed as the short Lee-Enfield rifle, mark I. The principle of improving the Lee-Enfield rifle in lieu of adopting an entirely new arm has been freely criticised; but it must be remembered that the Lee-Enfield and Lee-Metford rifles already in existence can be converted to the new pattern; and as between 1 and 2 millions of these weapons have been made a considerable saving will be effected. Again all the Great Powers are experimenting with automatic rifles, and their introduction does not appear to be far off. It therefore seems sound to avoid the great expense involved in adopting an entirely new rifle and cartridge (which latter would also affect machine guns) until the solution of the automatic rifle problem has been attained.

Before giving a detailed description of the new rifle a few of the most important points of difference between it and the Lee-Enfield rifle will be mentioned. The new rifle is handier, being 5 inches shorter, and on the average a little over 1 lb. lighter than the old one. It is necessary to use the words "on the average" because rifles of the same pattern may vary in weight by nearly a pound, on account of differences in weight of the butt and fore-end; those made of hard dark heart wood weighing the heaviest. This shortening of the rifle was due to the instructions received by the Small Arms Committee to make the rifle a universal arm, suitable for Infantry and Cavalry alike. From trials made it was found that a rifle 5 inches shorter than the Lee-Enfield was the longest that could be conveniently carried by Cavalry in a bucket.

The magazine of the new rifle is filled by means of a charger, as in the Mauser rifle. The charger is placed in the magazine, and the cartridges are swept out of it with the thumb into the magazine, and the empty charger is then

PLATE 1.





away. Each charger holds 5 cartridges, and the magazine will take two charger loads or 10 cartridges. It is not advisable to make the chargers to hold ten rounds, as such a long column of cartridges would be liable to get askew and jam while being pressed into the magazine. It is incorrect to call this type of cartridge holder "a clip"; this term is applied to cartridge holders such as are used with Mannlicher rifles. Clips are inserted *with* their cartridges into the magazine, and drop out of a hole in the bottom of the latter when the last cartridge has been loaded into the chamber. Charger loading enables a greater rate of fire to be attained, hence the barrel is liable to become much hotter; therefore to guard against the danger of the soldier burning his hands, the barrel is completely covered with a wooden handguard.

The chief complaints against the Lee-Enfield rifle were that the sighting in some cases was inaccurate, and that the design of the sights was not up to modern standards. Hitherto in testing the accuracy of our rifle, too much reliance had been placed upon the accurate gauging of the barrel and sights. These were made and gauged with the greatest care, extremely small tolerations being allowed. Yet in spite of this accuracy of manufacture, some rifles would place their group of shots to one side or other of the mark. The reason of this is because the breeching up of the body to the barrel, the bearings of the bolt in the body, and the fit of the fore-end, band, and nosecap all exercise an influence upon the shooting, by affecting the vibrations of the barrel.

In the past, for a great number of years, the chief shooting test for accuracy has been from the Whitworth rest. In using this apparatus the fore-end of the rifle is taken off, and the barrel is clamped to a heavy metal fore-end which slides in guides upon the bed of the rest. This rest shows whether a barrel is capable of making a good group, but as its weight damps the vibrations of the barrel, and as the rifle is not fired with its own fore-end the diagram obtained is no criterion of what the rifle will do when it is fired stocked up from the shoulder.

To overcome these difficulties ranges of 100 feet in length have now been established at all the small arm factories turning out Government rifles. Every rifle is now fired in them, stock up, and has to place its group of shots in a given rectangle before it is issued to the service.* After being fired at

* This system of shooting every rifle has been applied to the later issues of Lee-Enfield rifles.

100 feet, 10 per cent. of the rifles are also given a further shooting test at 600 yards. To facilitate the adjustment of the sighting, the barleycorn of the new rifle is dovetailed to the foresight block, so that it can be moved laterally, to correct any error in direction. To correct a vertical error in the sighting, 3 different heights of barleycorns are made, marked H. (high), N. (normal) and L. (low). The rifles are first tested with the normal barleycorns, any that shoot too high are fitted with the low barleycorn, and *vice versa*. If this does not effect the required correction, the rifle is overhauled and adjusted, generally by means of a slight alteration to the breeching up, or to the stocking, or by changing the bolt.

The shooting tests described above are carried out with the backsight slide in the lowest position, *viz.*, at 200 yards elevation. When this is correct it is certain that all the other elevations are true to the standard sighting curve, for the other elevations are all carefully measured heights above the 200 yards elevation. This standard sighting curve gives the elevation required at each range under normal atmospheric conditions; and is found practically by firing a number of the rifles at every range, and then taking the average of the elevations used at each range. This shooting is carried out at Hythe, in suitable weather by the finest marksmen available.

With regard to the criticism that the design of the sights of the Lee-Enfield rifle is antiquated; this may be accepted as well founded; for the present design has been used on our rifles since the days of the Enfield rifle in 1852. The improved backsight adopted for the short Lee-Enfield rifle is provided with a wind gauge, and with a cap, which may be slightly raised or lowered by means of a fine adjustment screw, when very small differences of elevation are required. The full description of the sight will be found further on.

Some critics have condemned the addition of the wind gauge, and fine elevation, as being unnecessary; because they would be but rarely used on service. It must be remembered however that these adjustments will be most helpful in the musketry training of the soldier; they will encourage a taste for rifle shooting; and will enable higher scoring to be attained which will have a good moral effect on the soldier by increasing his confidence in his weapon.

We will now describe the parts of the rifle in detail, taking the barrel first. The shortening of the rifle has been entirely effected by shortening the barrel; this therefore is 5 inches shorter than that of the Lee-Enfield rifle; it is however 1 inch longer than that of the carbine. It is also considerably

thinner than the barrel of the old rifle, as will be seen from the following table :—

Rifle.			Bore.	Thickness of barrel at muzzle neglecting the depth of the rifling.
			Inch.	Inch.
Short Lee-Enfield	...	...	0.303	0.127
Lee-Enfield	...	...	0.303	0.175
Mexican Mauser	...	...	0.276	0.166
Dutch Mannlicher	...	...	0.256	0.145

This table includes the latest patterns of Mauser and Dutch Mannlicher rifles for comparison. The barrel is amply strong enough to fire cartridges giving a pressure 50 per cent. greater than that of service cartridges. The reduction in length and thickness effects a saving in weight of about $\frac{1}{3}$ lb. The reduction in thickness however makes the rifle sensitive to small variations in the stocking up.

If the barrel of a Lee-Enfield rifle were to be reduced in length 5 inches it would be found that the velocity would fall off considerably. This disadvantage was overcome by slightly altering the design of the bore, while retaining the Enfield form of rifling. The alterations consist in making the cone which joins the bore to the chamber, shorter; and deepening the grooves of the rifling towards the muzzle. The result being that the new rifle gives a slightly higher velocity than the Lee-Enfield; consequently the bullets fired from it will range a trifle further.

The foresight block is carried on a collar, which encircles, and is keyed and pinned to the barrel. The barley-sawn (1)—see plate II—is hardened and tempered, and is therefore less easily damaged than that of the Lee-Enfield which is left soft. It fits in a dovetail on top of the foresight block, and is capable of being adjusted laterally.

The backsight bed is provided with a curved ramp (2) on either side; it is screwed and cross-pinned to the barrel. The backsight leaf (3) is pivoted to the bed at its front end. At the rear end, a cap (4) is dovetailed on, it can be worked up or down by means of a vertical screw whose head (5) projects below the leaf. This cap and screw form the fine adjustment, by means of which small alterations in elevation may be made. A scale on the edge of the leaf is graduated with

divisions representing 6 inches per 100 yards range; thus at 200 yards if the cap were screwed up 1 division on the scale the point of impact would be raised 1 foot.

At the end of this cap is a horizontal slide (6) forming the wind gauge. It is traversed to the right or left by means of a screw, the milled head of which (7) projects to the right. To prevent this screw from wearing loose and turning too easily a small spring washer (7a) is inserted between the head of the screw and the cap of the backsight. The wind-gauge slide carries the V which is smaller and more obtuse than that of the Lee-Enfield. The scale (8) on the rear face of the cap is graduated in the same manner as that of the fine adjustment.

Elevation is obtained by moving forward the slide (9) which encircles the leaf. As it mounts the ramps on the bed, the rear end of the leaf is raised. The elevation lines for ranges from 200 to 2,000 yards are cut at equal distances along the top surface of the leaf. The scale is thus continuous, and has no break such as occurs in the Lee-Enfield between 500 and 600 yards. To prevent the slide slipping during the shock of recoil, teeth on the slide engage in grooves (10) on the side of the leaf; grooves being cut for each 50 yards elevation, alternately on each side of the leaf. To move the slide it is necessary to press the bone studs (11) on either side of it, between the finger and thumb; this releases the teeth, and allows the slide to move freely. These studs are made of bone to prevent the finger and thumb from being burnt when adjusting the sight after rapid firing, for bone is a good non-conductor of heat. The stud on the right operates the tooth that engages at every 100 yards graduation, and the stud on the left that for the intermediate 50 yards graduations. Therefore if the studs are pressed alternately and the slide pushed up, increments of elevation of 50 yards at a time may be quickly obtained without looking at the sight.

The stocking up differs considerably from that of the Lee-Enfield rifle.

The butt is of similar shape, but slightly thinner all over. It has four longitudinal holes bored in it for lightness. The butt plate, made of sheet steel, is lighter, and has no butt trap; for the soldier will carry the mineral jelly and pull through in a tin box in his haversack. Three lengths of butts will be issued; some of the present length, others $\frac{1}{2}$ inch longer, and $\frac{1}{2}$ inch shorter. It is hoped by this means to improve the snap shooting of the army; and to reap the full

benefit of it, the men will have to be as carefully fitted with butts as they are with boots. In fitting them, it is suggested that an officer should make the men throw up their rifle to the present, and snap at his eye. They will do this most easily with the butts that fit them best.

In very dry climates it is found that the butt of the Lee-Enfield rifle is liable to shrink; the socket end then becomes loose in the socket of the body, and the constant jarring the rifle receives when it is carried by mounted men causes the stock bolt to unscrew gradually. To overcome this defect, the socket end of the butt (12) of the new rifle is impregnated with paraffin wax, to keep out moisture; it is then compressed by machinery to consolidate the wood, and is then forced into the socket of the body, so that there is very little likelihood of the wood shrinking any more. To prevent the stock bolt accidentally turning, the front end (13) is cut square and projects beyond the front face of the socket of the body. The square end fits into a square notch in a keeper plate (14) which is let into the rear face of the fore-end. It is therefore impossible for the stock bolt to turn unless the fore-end has been removed.

The breech end of the barrel is held down in the fore-end by means of the front guard screw (15). The centre of the barrel is encircled by a loose collar (16) called the inner band. A screw (17) passing up through the bottom of the fore-end holds the inner band and barrel down on to the bottom of the barrel groove. The barrel groove in front of the inner band is slightly larger than the barrel, so that the latter may be influenced as little as possible by the fore-end.

The barrel hole in the noscap (18) is arranged so that the barrel bears upwards against the top of it. This hole is grooved at the top (see 19, Fig. 1) so that there are two definite shoulders (20) for the barrel to bear against. This centres the barrel and ensures it taking up the same position in the barrel hole after every shot.

The noscap is much larger than that of the Lee-Enfield rifle. This is because the bayonet is fixed on the noscap also; the latter therefore has to take the full strain in bayonet fighting. The sword bar or standard (21) which fits into the pommel of the bayonet, is on the underneath part of the noscap; and a boss (22), which fits into the cross-piece of the bayonet, projects in front of the noscap. On top of the noscap are two high wings (23) which protect the bayonet; their edges are roughened to prevent them reflecting the sunlight. These wings are not likely to be mistaken

for the barleycorn when snap shooting, as they are much higher and thicker than the latter.

The handguard is divided into two parts by a saw cut (24) opposite the backsight. The front handguard fits into an undercut (25) in the nose cap, and is held down by the outer band (26), the latter being jointed on top. The rear handguard clips on to the barrel by means of a spring similar to that used with the handguard of the Lee-Enfield rifle. Except for this spring the handguard does not touch the barrel anywhere. On top of the rear handguard is the fixed backsight protector (27) which is provided with two wings; these latter tend to prevent the backsight from being injured by blows or falls. The wings are roughened on top, like the wings of the nose cap.

There are two charger guides to support the charger, while the cartridges are being pressed out of it into the magazine. One (28) is formed on top of the left side of the body, the other consists of a sliding component (29), Fig. 2, added to the bolt head.

Each is provided with a small groove (30) into which the stops (31 Fig. 5) on the sides of charger fit. On drawing back the bolt, the rear face of the bolt-head charger guide (29) strikes against the right resistance shoulder, this stops it, while the bolt continues to go back for about $\frac{1}{4}$ inch. The grooves in both the charger guides are now opposite to each other, and ready to receive the charger. On closing the bolt, the bolt-head charger guide first strikes the body, and stops while the bolt continues to advance until its face is flush with the face of the charger guide. This sliding charger guide is a complication not to be found in other rifles. It is necessitated by the Lee bolt-head, the construction of which prevents a fixed charger guide being formed on the right side of the body.

The bolt cover is done away with, as the charger guide on the body projects upwards, and prevents it being used. This places the new rifle on a par with the rifles of all the other Great Powers, in its lack of protection against sand. The absence of the bolt cover has one advantage, it enables the exterior of the bolt to be more easily cleaned; and a clean bolt can be worked more easily than one covered with dirt or dried oil. To further ensure the smooth working of the bolt in the body, it has been polished externally, and so also has the bolt way in the body. The cocking piece is shorter, as the safety catch has been removed, and placed on the left of the body beside the aperture sight.

The bolt can now be stripped without the use of tools. In place of the striker keeper screw at the back of the cocking piece, there is a small nut (32); when this is pulled back, and given a partial turn, the striker is free to unscrew in the cocking piece. The unscrewing is effected by unscrewing the bolt head; for a projection in front of the collar on the striker engages in a slot in the bolt head tenon; therefore these two unscrew at the same time, the striker from the cocking piece, and the bolt head from the bolt. The latter can then be stripped and cleaned.

A deep recess (33) has been cut in the left side of the body, just in front of the charger guide, to afford clearance for the thumb, while it sweeps the cartridges into the magazine. The locking bolt and safety catch are each provided with a stem (33) (34) which passes through the left side of the body. The former engages the cocking piece, and prevents the rifle being fired; the point of the latter enters the cam groove of the bolt, and so prevents the bolt being opened. The end of the locking bolt stem is partly cut away at (35) so that when the roughened thumbpiece of the locking bolt is in the forward, or dotted position, the cocking piece is free to pass over it. When the thumbpiece is turned over to the rear, the part of the end of the locking bolt stem which is not cut away enters a recess in the side of the cocking piece and retains it. The stem of the safety catch is formed with a collar (36) which is threaded, and fits over the threaded portion (37) of the stem of the locking bolt; thus when the latter is revolved, the safety catch is forced inwards or outwards. When this locking bolt and safety catch are placed in the safety position, there is far less likelihood of their being accidentally knocked to the firing position, than is the case with the safety bolt of the Lee-Metford rifle. The bolts of these latter rifles are sometimes lost by mounted troops, through the safety bolt being accidentally depressed by a blow, after which the bolt handle and bolt head get knocked up when the bolt is free to fall out.

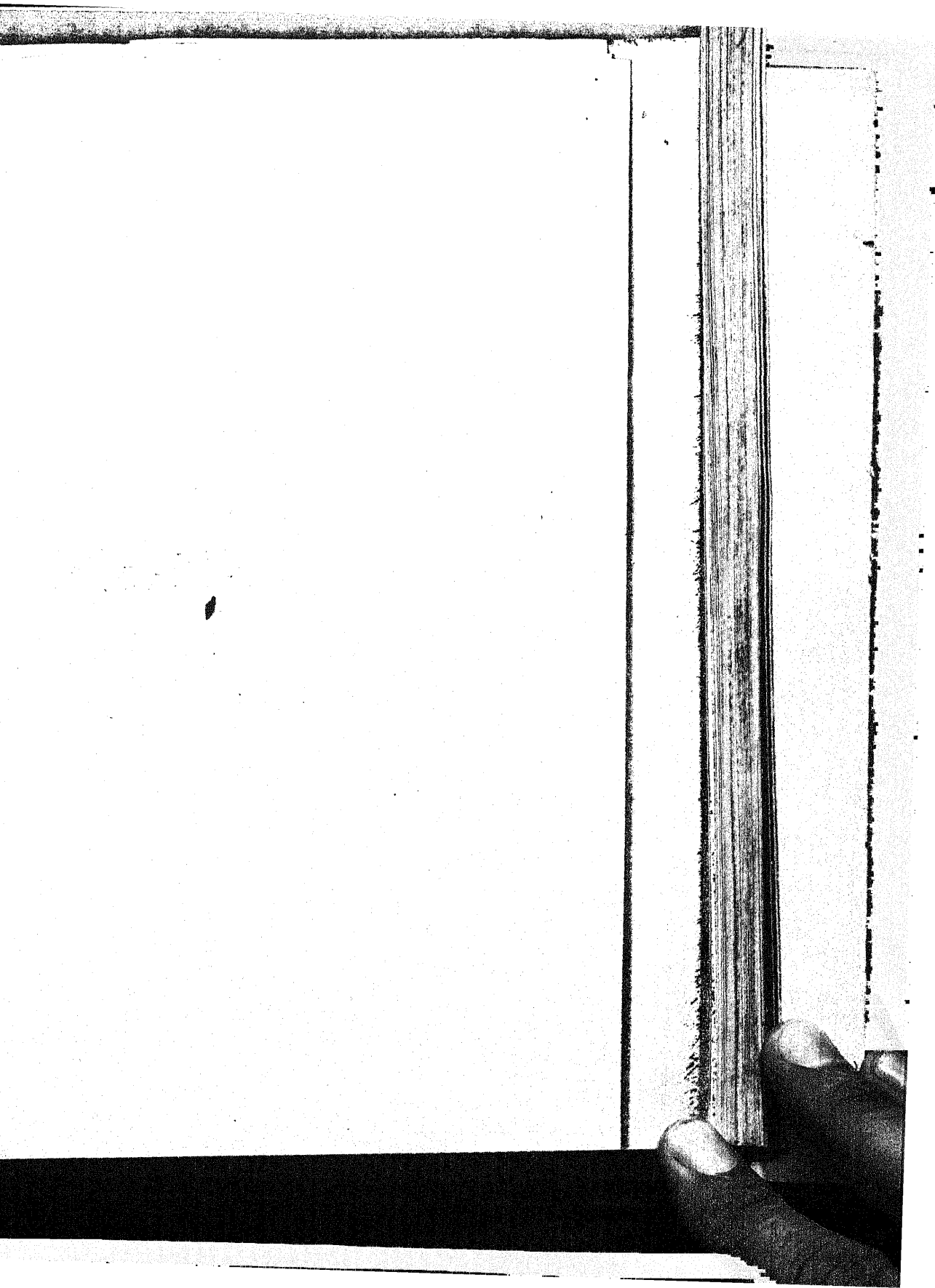
In the new rifle a double pull-off has been introduced. Instead of the trigger being connected with the sear by a single joint, there are two ribs (38) (39) Fig. 4, on the trigger, at different distances from its axis. On first pressing the trigger, the rib (38) nearer to the axis engages the sear, and the upper arm of the latter is depressed, until it is bent at the edge of the bent of the cocking piece. The rib (39) which is further from the axis of the trigger now engages with the sear, and completes the release of the sear from the

cocking piece, whereupon the rifle is fired. The effect of this arrangement is, that when rib (38) is in contact with the sear a pressure of 3 to 4 lbs. is required to move the trigger but when rib (39) engages the sear an extra pressure of 2 lbs. is required to move the trigger as the leverage is reduced. In deliberate firing, the trigger is pressed until a check is felt indicating that the rib (39) has come into action, then when the exact aim is attained the rifle is fired by an additional pressure of 2 lbs. This system practically gives the advantage of a hair trigger without its danger. In snap shooting the two pulls can be taken together, without any pause between them.

At present there is no cut-off provided, except for rifles for the Navy, but its slot is cut in the body in case it may be desired to introduce one hereafter. The magazine is provided with a stop clip pivoted at its right top corner. This component helps to retain the top cartridge of the righthand column in place, until it is pushed out by the bolt. On pushing it over to the front when the magazine is taken out of the rifle, the platform and magazine spring can be removed and the magazine cleaned out. The magazine spring is a zig-zag spring of ribbon steel. The platform spring auxiliary (41) runs down the inside of the front of the magazine. Its mission is to fill up the space that was occupied by the old C spring and to keep the platform at the correct angle when fully depressed.

A marking disc similar to that used with the Lee-Metford rifle is let into the butt, as there is no room for regimental marks and numbers on the heel of the butt plate, as in the Lee-Enfield rifle. The charger is made of sheet steel and is pierced for lightness. The front edges (42) spring inward slightly, so as to grip the cartridges firmly, and hold them in line while they are being pressed down by the thumb. The handiness of a rifle depends on the following conditions being fulfilled:—

- 1st—The parts gripped by the hands when at the present must be of convenient shape, and the trigger must be within easy reach of the small of the butt. In the new rifle the small of the butt is slightly reduced in thickness, which makes it more comfortable, and the shape of the trigger is rather more curved which is an improvement.
- 2nd—The position of the centre of gravity of the rifle must be a little in rear of the point where it is grasped by the left hand. If it were too far



Enfield rifle weighing $8\frac{5}{8}$ lbs. its maximum velocity of recoil $= \frac{9\frac{1}{4}}{8\frac{5}{8}} \times 8.92 \text{ f. s.} = 10.12 \text{ f. s.}$ We can now find the

energy of recoil of the two rifles from the formula $\frac{W V^2}{2g}$ where

W = weight of the rifle in lbs.

V = maximum velocity of recoil in feet per second.

G = the acceleration due to gravity
 $= 32.2 \text{ f. s. per second.}$

On working it out we see that the energies of recoil are as follows:—

Lee-Enfield Rifle = 11.4 ft. lbs.

Short Lee-Enfield Rifle = 12.9 ft. lbs.

From this it is clear that the energy of recoil of the new rifle is very slightly in excess of the Lee-Enfield, and to realise how small it is we may mention that it is less than half that of an ordinary 12-bore shot gun with the usual load.

A French writer on shooting seriously stated that the recoil of a gun was increased when fired in the neighbourhood of a wall, or building. This is of course an error, the writer had evidently been impressed with the louder report, which occurs in such situations, and imagined that the recoil had also increased. Some such confusion of sensations, may have lead to the idea that the recoil of the short Lee-Enfield, is much heavier than that of the Lee-Enfield, for the report of the former is louder than that of the latter, on account of the barrel being shorter, and the gas issuing from it at a higher pressure.

The accuracy of a rifle depends on two factors, *viz.*, the correctness of the sighting, and the smallness of the group of shots it is able to make at any given range. There is no doubt that the short Lee-Enfield is decidedly more accurately sighted than the Lee-Enfield rifle; and an improvement in the shooting of the British Army may be anticipated on this account. The size of the group of shots made by a rifle is usually judged by what is termed the figure of merit. This expression denotes the average distance of the shots from the centre of the group, which is called the centre of mean impact. The smaller the distance is, the closer the shots are together, and the more accurate the rifle is.

The figure of merit a rifle is capable of giving may vary according to the conditions under which the rifle is fired. The figure of merit may be taken under the following conditions:—

- (a) The fore-end may be removed and the barrel may be firmly clamped in the heavy sliding fore-end of the Whitworth rest. The figure of merit thus obtained affords a good test of the value of the bore of the barrel.
- (b) The rifle may be fired from the shoulder by a good shot. In this case not only does the stocking up influence the figure of merit, but the distance of the sights apart, and the ease with which they can be aligned affect the result.

With reference to (a), extended trials have shown that the barrel of the short rifle is rather more accurate than that of the Lee-Enfield rifle. With reference to (b) the figure of merit of the short rifle is generally slightly better than that of the Lee-Enfield at the longer ranges; but in this test there is very little difference between the two rifles. The superior accuracy of the bore of the short rifle, is about counterbalanced by the thinness of its barrel, which vibrates more easily when it is not clamped down in a Whitworth rest; and the sights being a little closer together are also a slight handicap. However for service purposes the short rifle will prove the more accurate weapon on account of its being more accurately sighted.

The following table gives the figures of merit of various rifles including the Short Lee-Enfield rifle. The shooting was carried out at the School of Musketry at Hythe.

Rifle.	Country.	FIGURE OF MERIT.			
		200 yards.	500 yards.	1,000 yards.	1,500 yards.
Short Lee-Enfield	France	73 feet.	78 feet.	1'39 feet.	3'42 feet.
Mauser	Germany	75 "	77 "	1'52 "	4'02 "
Mauser-Christie	Italy	77 "	78 "	2'04 "	5'04 "
Lee-Enfield	Great Britain	77 "	78 "	1'78 "	4'43 "
Short Lee-Enfield		78 "	79 "	1'81 "	4'09 "

The rapidity with which the new rifle can be loaded and fired has greatly increased, thanks to the introduction of the charger. With the Lee-Enfield, when the magazine

empty, the rate of fire was but little better than that of a single loader. With the new rifle 5 cartridges can be loaded as fast as 2 could be in the Lee-Enfield. Rapidity of fire has been one of the chief improvements aimed at in the development of small arms.

First of all the flint lock and then the wheel lock were introduced to overcome the loss of time which occurred with a matchlock. Then the use of the percussion cap saved the time taken in priming. The time lost in ramming down the old tight-fitting muzzle-loading bullet was saved by using expanding bullets such as the Miniè or the Greener.

The advent of the breechloader such as the Snider materially shortened the time taken in loading. A further gain in rapidity was effected by the Martini-Henry rifle, as the empty case was jerked clear of the rifle on opening the breech, and the rifle was left ready cocked on closing it. The Lee-Metford increased the rate of fire, especially for the first 8 or 10 rounds, as the empty case was extracted and the rifle cocked and reloaded merely by drawing back and pushing forward the bolt. Finally, in the short Lee-Enfield, a further acceleration in the rate of fire has been made through the introduction of the charger, which enables the magazine to be refilled with 5 cartridges at a time.

The next step forward towards increasing the rate of fire will no doubt be the introduction of an automatic rifle. In weapons of this type part of the energy developed by the explosion of the charge is utilised to work the bolt and reload the chamber the instant the shot is fired. All that the firer then has to do, is to aim, and press the trigger for each shot until the magazine requires replenishing. The work of lowering the rifle after each shot, reloading, and bringing it to the present again is avoided; but an advantage far outweighing the slight gain in rapidity, is the fact that the firer's attention is not distracted between the shots, but remains concentrated all the time upon the object, and this is an immense gain.

The problem presented by automatic weapons has been solved on a smaller scale by the introduction of automatic Pistols, and on a larger scale by machine guns such as the Maxim, Colt and Hotchkiss. In the former, the charge and moving parts are lighter; and in the latter the available space is far less restricted than is the case with automatic rifles, hence these latter are much more difficult to design.

The new rifle has a greater number of parts than the Lee-Enfield. This is accounted for, partly by the necessity

SHORT LEE-ENFIELD RIFLE.

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adhering to the Lee breech action, so that the old rifles can be converted to the new pattern; partly by the more elaborate and highly finished sights; and also through the introduction of new components such as the front handguard, backsight protector, etc. In conclusion the new short rifle is an accurate, handy, rapid firing weapon, which will be greatly appreciated by those for whose use it has been designed.

THE BATTLEFIELDS OF THE SAALE AND
THE ELSTER.*

BY LIEUTENANT-COLONEL THE HON'BLE E. NOEL, LATE
RIFLE BRIGADE.

We find in Central Germany a highway which starting from the river Main crosses the hilly and wooded tract known under the general name of "Thuringer Wald," and descending the valley of the Saale debouches towards Leipzig on to the great northern plain, and continues over this through Potsdam on Berlin. A further extension northward leads to the shores of the Baltic at Stettin or Stralsund, while in the opposite direction a southward extension reaches down to the Danube at Ingolstadt or Donauworth where this great north-and-south line abuts on an equally important east-and-west line running along the valley of that great river.

All through history we read of the tramp of armies up and down this line. Along portions of it the great Gustaf Adolf advanced southward on Leipzig in 1631, and again but in the opposite direction in 1632 to meet his death on the plain of Lützen and along it too later on, his dead body was carried to its last resting place in the far north. In the next century we find the armies of Frederick the Great on this same line, and in the following century it was traversed by the hosts of Napoleon northward in 1806 and 1813, and lastly by the Allied forces southward after the battle of Leipzig. We have thus here a region of singular interest to the soldier, who on almost the same ground can study the campaigns of the three great masters of modern war. The river Main is looked upon as the boundary between North and South Germany, and it was from this base that the Grand Army of Napoleon set out in the autumn of 1806, having moved up thus far from the Danube after the peace of Pressburg which concluded the war with Austria in 1805. The Prussian army lay on the north side of the Thuringer Wald

* It is not at all intended to give a full description of the battles referred to; most of them are well known, and it is assumed that the reader is acquainted with the general strategical and tactical situation of each: the two actions of the thirty years war, being as a rule less familiar to English readers, are somewhat more fully dealt with.

THE BATTLEFIELDS OF THE SAALE AND THE ELSTER. 305

extended too much to its right; Napoleon took advantage of this and by a quick strategic movement more brilliant than even that of Marengo circled round their left and made them fight in such conditions that defeat entailed disaster.

Bamberg which lies south of the Main was the chief point of concentration; Napoleon himself arrived here the 6th October. The forward movement began next day in three columns; the cavalry was already at Coburg north of the Main, two marches in advance of Bamberg. From Coburg the main road, taken by the left column passes Neustadt and Sonneberg, winds up the valleys of the Steinach and its tributary the Olse, crosses the ridge of the Thuringer Wald by a pass about 2,300 feet above sea level, descends steeply through Grafenthal on the small river Zopfe to the Saale at Probstzella now a railway junction of some importance, and thence follows the valley of that river through Saalfeld, Rudolstadt, Kahla, Jena, and Naumburg to Weissenfels, where it emerges on to the plain, and routes diverge left to Merseburg and Halle, right to Lutzen and Leipzig.

The first encounter on this line took place at Saalfeld on the 10th October. A monument on the road side a little north of the town reminds us of the death of Prince Louis of Prussia commanding in this action where the Prussians lost 1,000 men and 30 guns. Napoleon expressed his surprise at the ease with which this first success was won; he had expected to meet a stouter resistance than he had experienced the previous year from the Austrians. In the meanwhile on the centre line of advance the cavalry under Murat had been successful on the 8th at Saalburg higher up the Saale valley, and the corps of Bernadotte on the 9th at Schleiz a little further on. This column consisting of the 1st corps Bernadotte and the 3rd Davoust descending the Elster valley reached on the 13th Naumburg on the Saale on the main line of retreat of the Prussians. The right column, Soult and Ney's corps, which had advanced by Hof and Ilmenau, was brought across by Gera on Jena to unite with the left. Thus the right became the centre and the centre the right, and four corps, Soult, Ney, Lannes and Augereau were concentrated on Jena on the 13th. The Prussian army had been drawn together in the neighbourhood of Weimar; the main body about 50,000 commanded by the Duke of Brunswick and accompanied by the King had moved towards Naumburg covered by another force of about equal strength pushed out towards Jena under Prince Hohenlohe, while a

corps of 20,000 remained near Weimar; a dangerous division in proximity to the enemy.

The slopes of the Landgrafenberg rise steeply to the north of the town of Jena and to the west of the high road leading thence down the Saale valley to Dornburg and Naumburg. Lannes had boldly scaled these heights and from them, near a point now marked by a stone and called *Napoleonstein*, the Emperor descried the Prussian army of Hohenlohe encamped in three lines further back on the plateau. Ignorant of the King's movement on Naumburg and thinking that he had the whole of the enemy's army before him, he ordered Bernadotte and the cavalry to move towards him. Davoust at Naumburg wished Bernadotte to remain to support him. The conduct of the latter general is a much vexed question, which it is beyond the scope of this paper to discuss: the result was that while Napoleon with four corps and the Guard crushed the two rear divisions of the Prussian army near Jena, Davoust at Auerstedt had to contend with his corps alone against the main body at least twice as numerous, and Bernadotte took part in neither battle. The field of Jena is a bleak plateau with some woods and some poor villages. To reach it one must leave the town by the Weimar road and turn sharp to the right by a country road which after mounting the heights passes about 300 yards to the right of the *Napoleonstein* and to the left of the village of Closewitz. A cross road to the left leads to Isserstedt and on to Weimar, and from Isserstedt a good road runs past Vierzehnheiligen and down hill to Apolda. It was on the high ground North-East of this small town that Bernadotte's corps arrived in the afternoon and thus added to the rout and confusion of the defeated army.

A little north of Apolda a monument to Bismark is in course of construction: turning near this to the right on to the high road we cross the small river Ilm and the brook Emse and leave the Grand Duchy of Saxe-Weimar for the kingdom of Prussia. The village of Auerstedt on the Emse brook lies about two miles to the East of the road which goes on to Eckartsberga a large village, with a castle, on a high hill. Turning here to the east, a run of under five miles over high ground brings us to Hassenhausen across the field of the battle of Auerstedt: the fighting took place mostly near the village, and not at Auerstedt. It was here that the French infantry withstood the charges of Blucher's cavalry, and here that occurred the interesting conflict between the methods of the 18th and 19th centuries fully described by Home in his *Précis of Tactics*. It was along the high ground

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Eckartsberga, that Davoust made his final flank movement, and thus won one of the most remarkable victories in the wars of the Empire.

Eckartsberga was a point of strategical as well as tactical importance, for, by seizing it the French cut off the last retreat of the enemy northward by way of Freyburg, and the fugitives from two battles were forced to the Westward, thus laying open the road to the capital and exposing the whole Prussian monarchy to conquest.

In the fields West of Hassenhausen there is a monument to the Duke of Brunswick who fell in this battle; near it are two oak trees planted by the Emperor William and Prince Bismark. In this battle Gudin's Division, about 7,000, lost half its strength, and the whole corps over 25 per cent.

Beyond Hassenhausen there is a steep descent from the plateau to the Saale at Kosen, whence it is about four miles down the valley to Naumburg. After having visited the Fields of Jena and Auerstedt where the Prussian army was overthrown in a single day, the military tourist will make for Rossbach field to witness the scene of one of the most glorious victories of that same army. This lies to the west of our great highway. A few miles can be saved by leaving Naumburg to the right and making straight by cross roads for Freyburg-Amunstrut, already mentioned as the last point of retreat left to the Prussians from Jena: it was the first resting place of the Queen of Prussia in her flight after that battle. It is curious that just here, lying close together, are two small villages bearing the names of 'Jena' and 'Rossbach.'

Freyburg is about five miles from Naumburg, and the Elster is a left bank affluent of the Saale. From Freyburg it is about 7 miles to the small town of Mûcheln which affords the best accommodation in the neighbourhood of Rossbach field. This town is in the valley of the Geisel, a stream flowing eastward and joining the Saale at Merseburg. Soubise's position was on the high ground to the south of the town, facing south-south-east with both flanks more or less "en sautoir" and a deep ravine in rear. This position he wisely changed for another at right angles and facing east-north-east. This second position, which Frederick would not attack, was about 4,500 yards long with each flank covered by a ravine that of Mûcheln on the left and of Branderoda on the right. The right was further strengthened by some troops holding

the woods south of Branderoda beyond the ravine. A position such as this was not suitable to Frederick's favourite method of attack by the oblique order of battle the more so considering that he had only 22,000 while the 'combined' army^{*} opposed to him numbered over 50,000. He accordingly took up a position himself, behind the brook Leihe with his right towards Bedra and his left towards Rossbach, and facing the 'combined army.' This was on the 4th November 1757.

The next day Soubise began his extraordinary plan of making a long turning movement to reach the King's rear, in broad daylight and without any attempt to draw the enemy's attention to his other flank, or even to find out what he might be doing. How this was defeated, by Frederick moving his cavalry round the Janushügel and attacking the heads of the columns before they could form front, is one of the best known episodes of military history. The whole ground of these manoeuvres, between the ravines, is a nearly flat tableland. The Janushügel behind which Frederick moved, is no "height" in the pronounced meaning of that word; there is no *hill*; it is merely the highest part of a very gently sloping upland, and the lesson to be learnt here is—what very little undulation of ground is enough to conceal the movement of troops.

Soubise on this occasion showed as little skill in strategy as in tactics. The King crossed the Saale at three points, Halle, Merseburg and Weissenfels, some ten miles apart, the river forming here a curve concave toward his enemy. Had Soubise therefore held each point of passage with a detachment and kept his army in a central position somewhat east of Mückeln, he could have fallen with overwhelming force on the King's columns and defeated them separately. His allowing the king to effect a junction, and waiting for him in position was an inexcusable error, and justified Napoleon's remark that he lost his honour as well as his army.

There is a road from Mückeln to Branderoda parallel to and in rear of Soubise's second position. Turning here to the left another road leads down the ravine of the Leihe, and passing to the left of Rossbach village, reascends the plateau and crosses the centre of Frederick's position straight on the Janushügel. Here there is a fine monument in red stone, consisting of a large mural tablet with, in relief, a winged

^{*} *i.e.*, of France and the German Empire.

figure of Victory mounted on a charger and riding over a prostrate foe. Above is the following inscription:—

Zum Gedächtniss des Sieges den Friedrich der Grosse am
5. November 1757 hier über den dreifach stärkeren
Feind erfocht. Errichtet von Friedrich Wilhelm IV.
im Jahre 1860.

above all the Prussian eagle.

Behind is a small garden and a house. The custodian is a fine old Prussian soldier who fought in the wars of 1864, 1866 and 1870-71, and is justly proud to show his medals.

A few hundred yards further on, on the opposite side of the road is another and much smaller monument with an inscription telling us that it was raised on the 23rd October 1813 by the soldiers of the 3rd Prussian Army corps when passing here on the march after the battle of Leipzig. This was to replace the original monument, a very small column, erected in 1766, and destroyed by the French after the battle of Jena. This monument must stand on the ground of Seidlitz's great charge.

The spires of Lützen can be discerned from the Janushügel, but the straight way thither through Korbetha is by country roads: it is better, on reaching the Weissenfels—Merseburg high road to run to Weissenfels not more than seven miles. Although not the scene of any great battle Weissenfels is rich in military reminiscences. This is where Soubise was with the 'combined army' on the 27th October, and whence he retired on the approach of Frederick on the 29th, and where the latter crossed the Saale on the 30th having overpowered the garrison left behind by Soubise.

Weissenfels was occupied by Davoust's Corps three days after the battle of Jena, the same day that Bernadotte captured Halle, twenty miles further down the river. It was held by Wallenstein in 1632 and evacuated by him on the arrival of the Swedish army at Naumburg, 8 miles further up the river. It was from here that Pappenheim was detached from the Imperial army, a circumstance of high importance, as it was in consequence of his learning through an intercepted letter of this large detachment, that Gustaf Adolf with true military instinct resolved at once to attack Wallenstein who had fallen back on Lützen. It was from the castle of Weissenfels that Colloredo, commanding Wallenstein's rearguard, fired on the approach of the Swedes on the 5th November the three cannon shots agreed upon as a signal for the assembly of the army from their cantonments around Lützen. It was

here too that two days later the King of Sweden's body embalmed and his entrails buried, and here his heart handed over to his sorrowing Queen Maria Eleonora, had hastened down from Erfurt on hearing of his death.

At Weissenfels took place in 1813 the first encounter between the newly formed French army and the Russian cavalry of the advanced guard, and the town was occupied by Ney on the 29th April. At Weissenfels the hilly country ends and we come out on the great northern plain. From Weissenfels to Leipzig is twenty miles and Lützen about halfway.

Again about halfway to Lützen we cross the Rippa, a right bank affluent of the Saale. Here Gustaf Adolf had forced the passage against the opposition of Isolani's Croats on the 5th November 1632, and he was so long delayed that on the short autumn day he had not time to attack Wallenstein as he had hoped to do that afternoon. He halted therefore North of the stream. Here too on the 18th May 1813 the Russian advanced guard was met by the French and driven back on Pegau: in this action Mars Bessières was killed.

To see Lützen field of 1813 we must here leave the highway and take a country road to Starsiedel $3\frac{1}{2}$ miles, a village which marks the right of the field as viewed from the side of the French. Two and-a-half miles further we come to the Flossgraben which marks the left. The Flossgraben, which also fringes the battle-field of 1632, is a ditch connecting the Elster with the Saale in the general direction of South-East to North-West, it holds but little water.

On the hither side are four villages Gross and Klein Görschen, Rahna and Kaja, and in and about this quadrilateral most of the fighting occurred in the battle of May 2nd, 1813. These villages were taken and retaken four or six times during the day.

Napoleon was advancing on Leipzig when the corps of Ney was attacked by 70,000 Russians and Prussians under Wittgenstein and Blücher, who had crossed the Elster at Pegau. If they had followed up their first advantage vigorously they might have gained a victory before the French reinforcements could come into action.

Ney's four divisions held the four villages just mentioned; the fifth composed of Germans was beyond the Flossgraben. Ney himself had accompanied Napoleon on the Leipzig road, and had to hasten back to his command.

French Guards had to wheel about and must have crossed Gustaf Adolf's battlefield in order to come up as they did in the battle of Ney. Two French corps under Eugene, Napoleon's step son, were at Markranstadt between Lützen and Leipzig. These contained the remnant of the Grand Army after its retreat from Moscow. One corps marched on and occupied Leipzig, while the other swung round towards Lützen. The French at Lützen were thus re-inforced during the battle by Marmont's corps on the right from Rippach, 2nd by Guard from Lützen, 3rd by Macdonald's corps on the left from Markranstadt, and 4th by Bertrand again on the right from Rippach.

The Allies were also re-inforced by their reserves. The battle continued into the night and the Allies drew off next morning. In this battle the French lost 20,000; the Allies 10,000. In Ney's corps the losses amounted to twenty per cent. of its strength.

This battle field is a vast level plain with no marked features and on which the villages became the tactical points. Nearly two miles south of Gross Görschen is a monument to the Prince of Hessen—Homburg who fell in the battle, and further South is the so-called Monarchenhügel from where the Emperor of Russia and King of Prussia witnessed the fray. This battle gains additional interest from having been fought on those plains already rendered illustrious by the death of Gustaf Adolf. In itself it is mostly remarkable as the first victory in a new campaign after the disastrous invasion of Russia, and won with a new army composed largely of young conscripts. The heavy losses incurred by both sides are proof of the stiffness of the fight.

To reach the battlefield of 1632 we can either follow the Flossgraben, or, take the road from Kaja to Lützen and pass through the town. In a corner of the town hall is a statue of Gustaf Adolf and inside are preserved some of the colours captured by the Swedes in the battle. On coming out of the town on the Leipzig high road we find ourselves at once on the battlefield; the road in fact marks the line of battle. Wallenstein's army was drawn up on the left of the road and parallel to it: his right rested on Lützen, which he set on fire, and his left on the Flossgraben, a front of 2,500 yards. The cavalry was on the wings; the infantry in the centre in small squares; there were four of these, besides one detached to the right flank; the middle square was somewhat further forward than the two flank squares, and the fourth was

in rear of the centre. The Artillery—heavy—was in two batteries, one in front of the right and one in front of the centre. The road had a ditch on each side and was held by a double line of musketeers as an advanced line. It was hoped that Pappenheim, to recall whom messengers had been despatched to Halle, would come up on the left.

Gustaf Adolf was marching on Pegau to effect a junction with the Saxons, when as already related the news of the detachment of Pappenheim made him decide to fall upon Wallenstein at Lützen, but he was not able to carry this out, as he had hoped to do, on the 5th. The Swedish army was in movement before 5 o'clock, on the morning of the 6th November (O. S.) and marched in order of battle in two lines right in front, the cavalry of the right wing leading; the baggage formed a third line. On reaching the village of Röcken, two miles from Lützen it inclined to the right across the fields, and leaving the Flossgraben to its right and Lützen to its left, drew up oblique to the high road and facing the enemy; the right extended beyond the Flossgraben which here makes a bend and crosses the highroad two miles North-East of Lützen.

A thick fog hung over the plain and hid the opposing armies from one another.

The Swedish army was drawn up in two lines, cavalry on the flanks, infantry in the centre; of the latter there were four brigades in 1st line, three in 2nd, and one in reserve: the Swedish horse, six regiments, formed the right wing 1st line under the King's immediate command. Twenty heavy guns were massed in front of the centre; the light guns were distributed, firing along the front of each of the foot brigades. It was 11 o'clock when the fog lifted and the battle began. In the first attack the Swedes forced the road and captured the enemy's central battery. The left brigade diverged to the left and the gap thus formed was filled by the heavy artillery. Wallenstein had so far copied Swedish tactics as to form his cavalry in two lines: when the first was overthrown by the Swedish right wing, the second penetrated into a gap which had opened between the Swedish right and centre. This danger brought the King to the centre, and it was in leading his left cavalry regiments to the charge that he met his death. The fog came down again and the Swedes were driven back over the road.

Eager to avenge their king's death, the Swedes renewed the assault, now under the command of Duke Bernhard of Weimar. The second attack met with even more success, as both the enemy's batteries were taken, but the Swedes

were again driven back, chiefly owing to the arrival of Pappenheim who came up with four regiments of horse about 3 P.M. and was himself killed. By this time the two Swedish centre brigades had fallen almost to the last man. The fog still lay thick over the field, but late in the afternoon the sun shone through, and a third attack was made by the Swedish second line, which for the third time crossed the road, captured the hostile guns and drove the enemy from the field. Pappenheim's foot came up but Wallenstein did not renew the action; he retired northward leaving all his artillery behind. The numbers engaged were about 20,000 on each side, besides Pappenheim's 10,000. The killed and wounded amounted to 6,000 on each side, that is 30 per cent. of those engaged.

When we hear of *unprecedented* slaughter of the present war in Manchuria, it is well to remember the losses in some of these old battles, all incurred *in a single day*. There have been few harder fought struggles than this grim fight in the fog, and Lützen must be classed with Zorndorf, Kunersdorf, Eylau, Aspern and Borodino. The casualties in the 'yellow' and 'blue' brigades surpass those of the British Column that won the battle of Albuera.

Certain questions will here suggest themselves to the military student.

1. Why did not Wallenstein form across the high road, using his enemy's advance and covering his own line of retreat?

Wallenstein was a warrior of the old school and preferred a direct attack in a strong position. He probably wished to take advantage of the road to cover his front, and the town of Lützen to protect his right, and he had Halle, where Pappenheim was, to his rear.

2. Why did not Gustaf Adolf fall upon the enemy's left flank?

It must be remembered—

(1). That at this period flank attacks were not in vogue; armies were regarded somewhat as duels; one army drew up in a position, the other formed its array in front and parallel to it, when both were ready they set to: (2) that one of Gustaf Adolf's northward marches was to keep Wallenstein out of the territory of his ally the Elector of Saxony; by attacking in the direction of the high road he would drive him back on Leipzig; by attacking at right angles he would drive him away to the north-west, and (3) that

Gustaf Adolf wished to effect a junction with the Saxon army, and the place agreed upon for this was Grima which lies south of east from Lützen; by attacking as he did Gustaf Adolf covered this point and in event of not succeeding he could still have fallen back to join the Saxons, and could hope with their help to resume his forward movement.

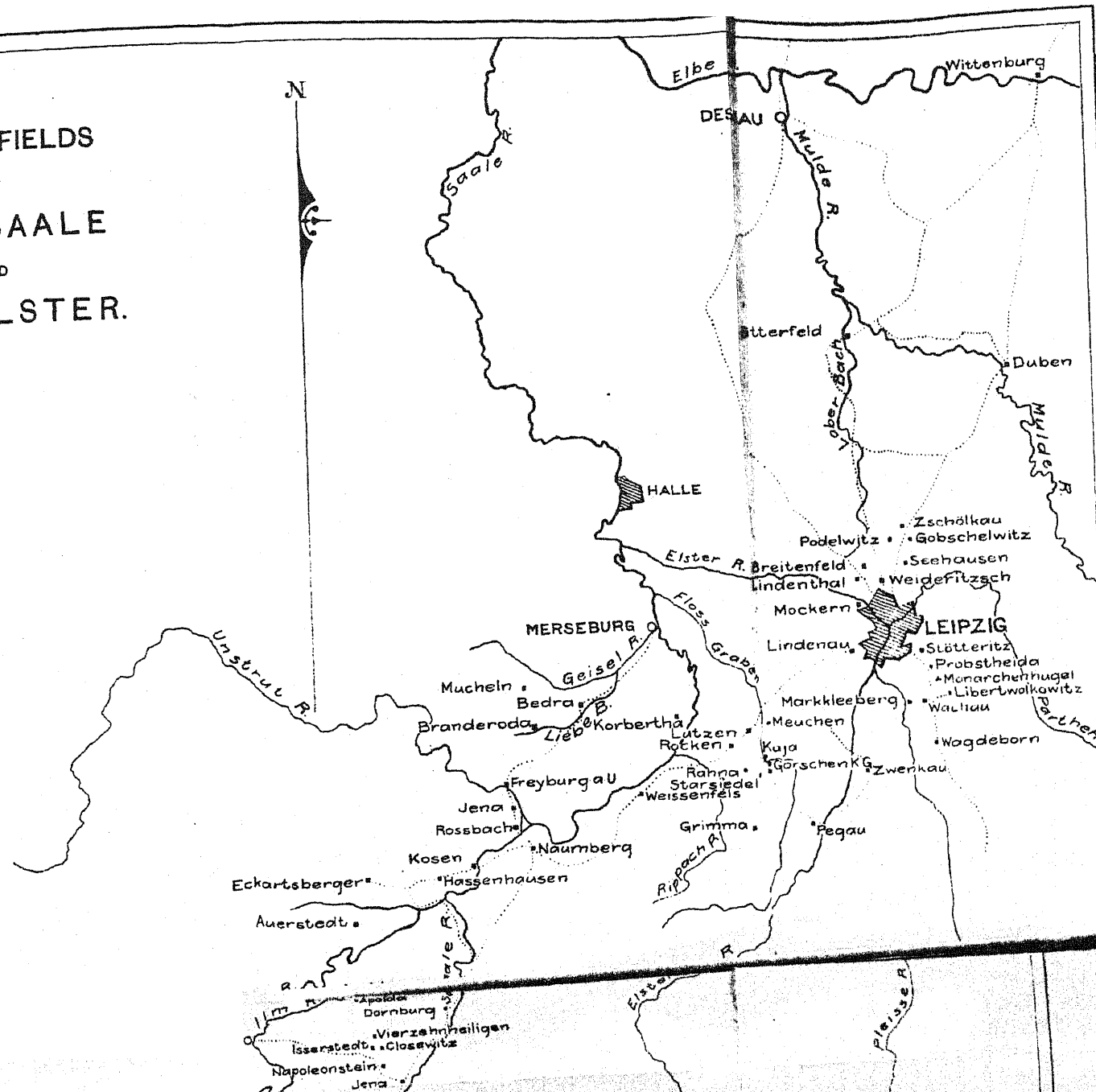
It is to be observed that the Swedish heavy artillery was mobile enough to occupy the gap between the 'blue' and 'green' brigades; this manœuvre was repeated on a larger scale by Napoleon at Wagram.

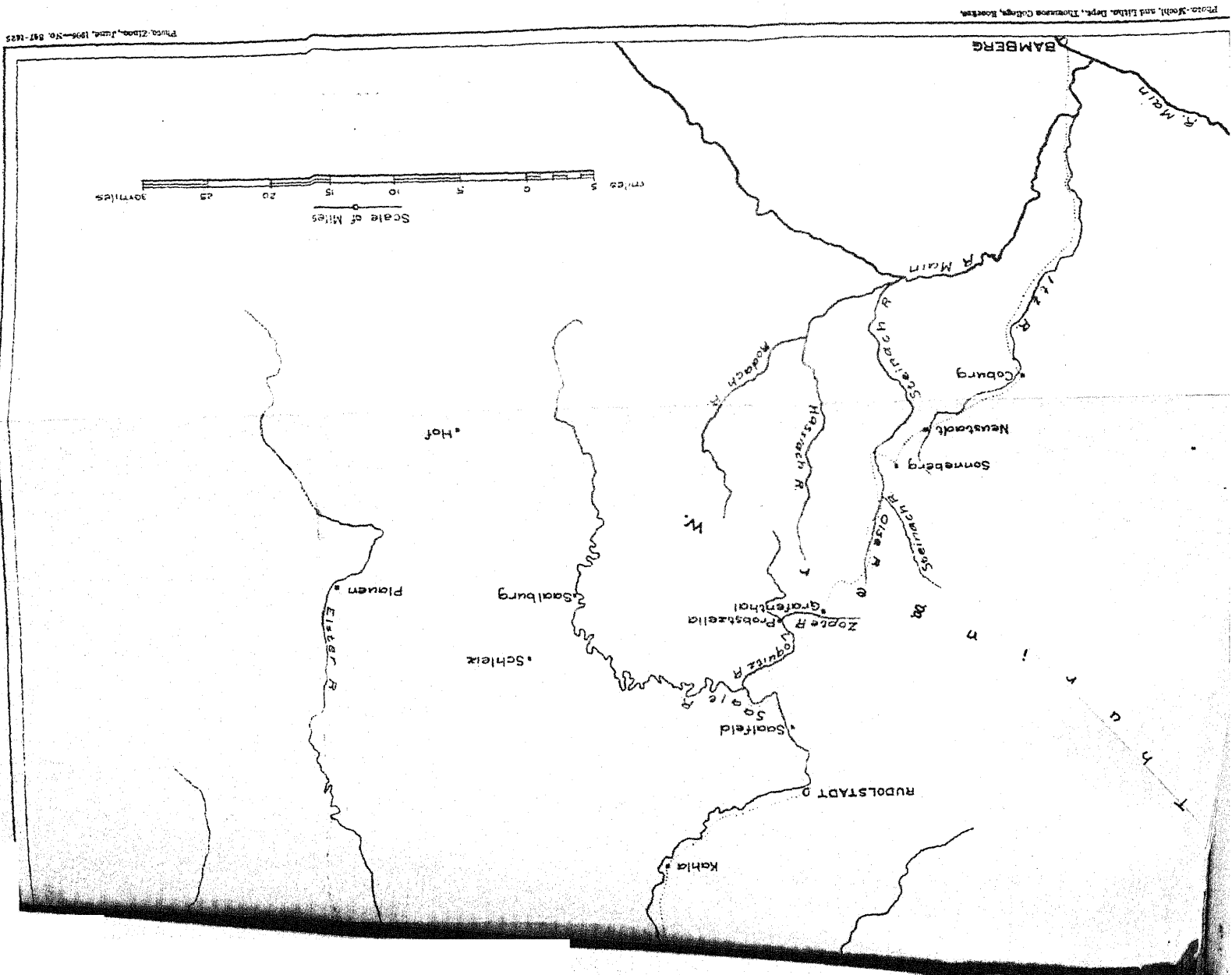
The most noteworthy lesson of the battle is the advantage of a *second line*; it was the attack of the second line in the evening that decided the day. The second line was weaker than the first, and had room thus to take up and carry on with it what remained of the latter. About the middle of the battle field and just on the south side of the road is Gustaf Adolf's Memorial, a granite block, the so-called "*Schwedenstein*" surmounted by a Gothic canopy. A few years ago, by way of celebrating the tercentenary of his birth, in questionable taste a *bier halle* was established adjacent to the Memorial. There was something dignified and solemn in the simple monument standing alone in a grove of trees on the open plain where the great king met his death, but this is the case no more when the spot becomes a place for "*bier trinken und singen*."

There seems little doubt that the king was killed on the north, *i.e.*, the enemy's side of the high road. The Swedish historian Geijer says that the true spot where he fell was forty paces away from the stone and was marked by an acacia tree: this tree no longer exists. The village of Meuchen where the King's body was carried after the battle lies behind the Flossgraben, south-east of Lützen. Between Lützen and Leipzig we pass from Prussia into the Kingdom of Saxony.

The town of Leipzig has grown very rapidly in late years, and with its 400,000 indwellers is fast spreading over its surrounding battle fields, which ere long may cease altogether to be "fields." The great struggle here in 1813, the "*Völkerschlacht*"—that is "battle of the nations"—as it is termed by the Germans, consisted of four distinct battles, fought on three separate days. On the first day the 16th October there were two battles, one to the south and one to the north of Leipzig: in the former, Napoleon with about 120,000 men held back 150,000 Russians, Prussians and Austrians, but his success was marred by the defeat of Mar-

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316. threaten the French line of retreat. By making from Lindenau for the battlefield of the 16th—south side—one can get a good idea of the low and moist tract that covered the right flank of the French, and after crossing the Pleisse at Kleeberg one is on the right extremity of their line on the first day. Schwarzenberg the Austrian commander wanted to commit the main body of the allied armies to this tract between the Pleisse and the Elster, but the Emperor Alexander refused to do so. He however sent his own troops this way, and this attack on the French right flank drew to that side their reserve, so that Napoleon had no further troops available to improve his advantage when he had broken the Allied centre south-east of Wachau.

This battlefield is an open and level plain now under cultivation. From Kleeberg a road leads to Wachau and on to Liebertwolkowitz; the French left extended as much as two or three miles beyond this village. The plain to the south of Wachau was the scene of the heaviest fighting, and also of the cavalry action on the 14th. Further south still are the defiles of the Göselbach about Magdeborn which Murat withdrew from on the 13th, intending to fall back to join Napoleon supposing that it was his intention to operate in the country north of Leipzig. At Liebertwolkowitz we are on the high road from Leipzig to Grimma, and returning along this we come to the centre of the second day's battle near Probstheida. On the way we pass on the left the Schwarzenberg *Denkmal*, and on the right the "Monarchenhügel" where the Emperors of Russia and Austria and the King of Prussia foregathered after the battle.

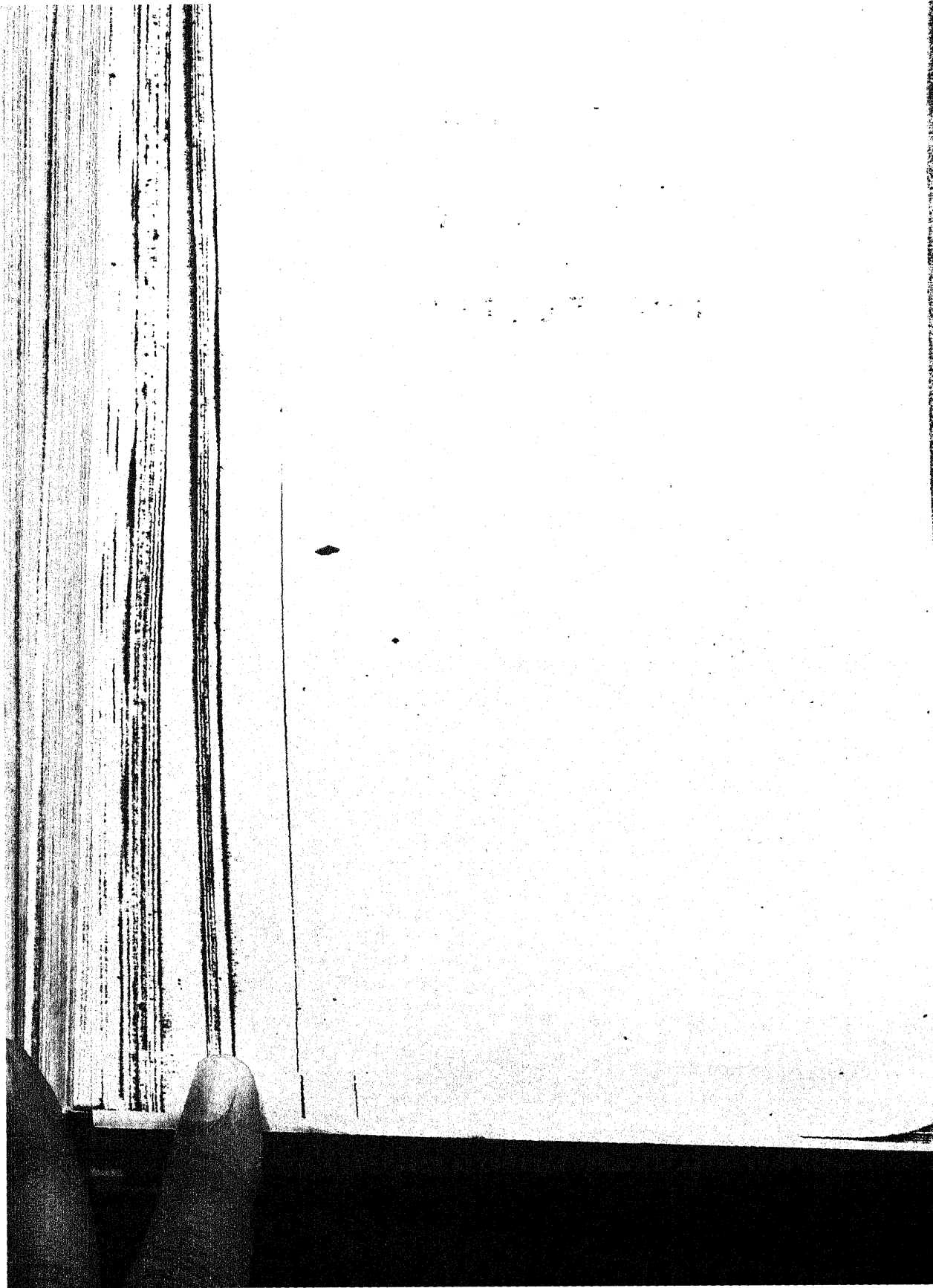
Not far from this in the grounds of the *Meusdorfgasthof* is a tower by ascending which one gets the best view obtainable of this day's battlefield upon which the town is fast encroaching. Near Meusdorf was also the station of Napoleon and the Old Guard on the 16th. At Probstheida, and about 300 yards off the road to the west, is the "Napoleonstein," a square block enclosed by a railing and on which is an inscription telling us that Napoleon stood here watching the battle on the 18th October.

A few years ago this spot was still in its natural state, but buildings are now rising near it. The ground immediately around it is being laid out as a garden. Near this, on the main road, is the *Gasthaus Napoleonstein* where there is

an historical museum containing a collection of arms, uniforms, letters, pictures, orders and other objects connected not only with Leipzig and its battle but with all Napoleon's career and times. A little south of the *Napoleonstein* an immense and massive Memorial of the *Völkerschlacht* is at present in course of construction. This huge and heavy monument frowning down on the plain block of the *Napoleonstein* will be a fitting figure of a struggle which was the triumph of brute force over Genius. To the soldier the greater interest will ever belong to that simple stone that marks the station of a Great Captain, so great that, even after the loss of his whole army in the snows of Russia, it still required a coalition of all the Kings and Emperors of Europe to overcome him. Taken as a whole, Leipzig is in the numbers engaged the biggest of modern battles; the total present must have exceeded half a million; the killed and wounded were about 90,000. There is in modern Leipzig a circular panorama of the great battle, which is quite worth seeing.

The old walls of Leipzig have been demolished, and only a piece remains of the citadel the Pleissenburg at the south-west corner. The market place in the middle of the old town was the scene of a ceremonial parade after the entry of the Allies. After having visited the south, another day can be well spent on the north side of Leipzig. Issuing by the Halle road to the north-west, after passing the suburb of Möckern, we find on the road side a memorial stone which informs us that we are already on the ground of Blücher's victory of the 16th October: we are here at the right of Blücher's line, and the Elster is on our left. Turning to the right and passing a large barrack we come out on to the fields. The village of Wiederritzsch, where the Polish troops were fiercely attacked by the Russians, is somewhat to our right and marks the centre of the French position, and that of Lindenthal is to our left, and is in rear of the centre of that of the Russo-Prussians. The lines of both armies extended further north-east towards Podelwitz, and thus one battle field overlaps another, and we are carried back from the 19th century to the 17th.

From Lindenthal it is little more than a mile to Breitenfeld, and passing on from there to Podelwitz we find ourselves on the field of Gustaf Adolf's great victory of the 7th September 1631. (O.S.) The scene of this was the plain between the villages of Breitenfeld, Podelwitz, Göbschelwitz, and Seehausen. The Imperial German army under the command of Tzerklas Count Tilly had captured Leipzig, and occupied an entrenched camp between Mockern and Eutritzsch, at that period villages well outside the town.



force of Blücher.

During the 17th the Allies were re-inforced by over 100,000 Russians, Austrians and Swedes, the last (together with some Prussians and Russians) under command of Bernadotte now Crown Prince of Sweden and in arms against his old master. The second day's battle on the 18th was semi-circular and concentric: the French who had retreated nearer Leipzig were concentrated round the town from south by east to north, the right on the Elster, the left on the Parthe—which joins the Elster at Leipzig—the apex near Probstheida and Stötteritz. The Allies were on a concentric line further out. The third and last day's battle, on the 19th, was fought on a much smaller semi-circle just outside the town, and was a rear guard action on a large scale to cover the retreat over the Elster and along the Lützen road.

The site of the first day's battle on the south side is still out in the country; that of the second day's is being fast built over; that of the third day's is now quite inside the town.

A hundred years ago Leipzig was wholly on the right, the east, bank of the Elster. Above the town this river is joined by the Pleisse which flows nearly parallel to it before its confluence on the right bank. The Parthe flows in also on the right bank, below the town, of which at that period it marked the northern limit. For some miles both above and below Leipzig, along the river there stretched a broad zone of marsh land, and this gave an additional importance to the point of passage opposite Leipzig. This marsh land near the town has now been drained and forms an extensive green. The bridge over the right branch of the Elster (the Alte Elster) the premature blowing up of which on the 19th was a disaster for the rear portion of the French army left behind on the far side is now inside the town: a memorial stone reminds us of it, and hard by a monument, and a street named after him, recall the memory of Poniatowski who commanded the Polish troops in Napoleon's Service, and who lost his life here in his attempt to jump the river.

Beyond the green is the suburb of Lindenau; this important post was held all through the operations by Bertrand's corps to secure the retreat. At the "*Kuhurm*" in Lindenau Napoleon rested awhile during the retreat: there is a cafe and garden here now and a pillar stating that fighting occurred here on the 16th October: this was against an Austrian force under Giulay detached across the Elster at Zwenkau to

At the approach of Gustaf Adolf with the Swedish and Saxon armies, Tilly marched out to meet him and took up a position across the Duben road, facing north, a little in advance of Breitenfeld (left) and Seehausen (right). The ground rises gently as far as this and thus slopes downward to the Löberbach, a small stream flowing west. His army was arrayed after the mediæval system still in vogue on the Continent, in a single line of contiguous columns, infantry in the centre and cavalry on the flanks. The former were in solid squares, pikemen who still wore armour in the middle, musketeers outside: each battalion must have been 1,000 to 1,500 strong. The cavalry were also in masses, ten deep, and all carried firearms on which they chiefly relied. The artillery, 27 (some say 36) heavy guns, were placed in front of the infantry on the highest ground, and once in position could not be moved.

The total force was over 30,000, of which one-third was cavalry, and occupied a front of about 4,000 yards. Tilly himself commanded the centre, Furstenberg the right wing—6,000 horse, and Pappenheim the left wing—5,000 horse. Gustaf Adolf's forces having crossed the Löberbach formed up facing Tilly, at a distance of 1,300 or 1,400 yards, between the villages of Podelwitz and Göbschelwitz. The Swedish army, on the right of the road, was drawn up in two lines and a reserve; infantry in the centre, six deep, and cavalry on the flanks, three deep; the latter relied on the '*arme blanche*' for attack, and for defence had detachments of musketeers between the squadrons. The heavy artillery, 12 guns, was in front of the left; the light, or regimental, 42 guns accompanied and moved with the infantry. The distance between the two lines was about 300 yards.

The right wing 1st line consisting of the Swedish horse proper was under the immediate command of the king, Baner being in 2nd line, and Horn on the left with the Continental horse in the Swedish service. In the foot the Swedes proper formed the right 1st line, the Scottish and Continental auxiliaries the left and 2nd line. The strength of the Swedish army is variously stated at 22,000 and 27,000: the Saxon 15,000 and 20,000. The Saxon army formed a quite separate array on the left of the road, cavalry on the flanks, infantry in the centre in a double line of squares.

The battle opened at midday with an artillery duel which lasted two hours. There was a strong wind from the south-west and as the ground was very dry, this blew a cloud of dust and smoke into the faces of the Swedes. Gustaf

THE BATTLEFIELDS OF THE SWEDISH

Adolf to avoid this and get the wind on one side, and probably also because he found the space between the villages too narrow for the full deployment of his army, drew out the right wing in front of Podelwitz, and swung round half left, so that now the Swedish line was formed obliquely to that of the German army, and, with the Saxons, occupied a front of about 4,000 yards.

Tilly at 2 o'clock moved forward his whole line to the attack. Pappenheim's cavalry, checked in front by the fire of the musketeers among the Swedish horse, drew away to the left and attacked in flank; Gustaf Adolf met this by wheeling up his second line, and after several efforts the German horse were routed and driven headlong from the field. On the other flank, at Furstenberg's attack the Saxons turned and fled; their right wing only offered resistance, but under pressure of Tilly's infantry they had to fall back behind the Swedish 2nd line. This infantry, in face of the hot artillery and musketry fire of the Swedish line, had edged away to its right, and following the retirement of the Saxons it continued the movement and attacked, together with Pappenheim's cavalry, the left flank of the Swedes. The latter now changed front half left, parallel to the road, the 2nd line wheeling into line with the 1st. At this critical moment, we find the king on this flank, and he brought some cavalry across from the right wing.

A stiff and stubborn fight, of line against square, ensued along the line of the high road. The Imperialists had the advantage of weight and numbers, the Swedes of more rapid fire and of light artillery which here did good service. Gustaf Adolf returned to his right wing and led the Swedish horse to the charge; captured the whole of Tilly's artillery and turned the guns against his own troops, raking their line. This decided the issue of the battle. Tilly's veterans well disciplined and hitherto unconquered fought and died bravely but in vain; the remnant fled in disorder; four regiments only were able to make a last stand at the edge of a small wood near Kleinwiederitzsch.

The Imperial German army lost in this battle about a quarter of its strength in killed and wounded; the Saxons about the same; the Swedes much less. The prisoners are variously stated and may have been 5,000.

This battle, the conflict of modern linear, and mediaeval mass tactics, marks an epoch in military history. With the new

tactics of Gustaf Adolf the Swedes had the advantage—

- 1st in infantry—extent of front, and rapidity of fire;
- 2nd in cavalry—shock in attack, and fire of musketeers in defence;
- 3rd in artillery—rapidity of fire, and use of light guns;
- 4th in all arms—greater mobility;
- 5th in formation in *two lines*.

The German Imperial army was not only defeated but destroyed. This is one of the most complete and decisive victories in history, and may be compared with Leuthen, Austerlitz or Jena. After the flight of the Saxons, the Swedes were inferior to the enemy, and their position was precarious; their success was due to superior tactics and this victory stamps Gustaf Adolf as one of the greatest captains of any age. The Swedes called this the 'battle of Leipzig'; this name has been appropriated to the mighty conflict of 1813, and we know Gustaf Adolf's victory by the name of 'Breitenfeld.' Near this village there is a plain monument to the Swedish King, not unlike the *Napoleonstein* on the other side of Leipzig—two similar memorials to the two greatest warriors who have shed lustre on her historic plains. This monument does not stand absolutely on the field of battle, but on the ground where the Swedish army formed up after it.

This is the last of the battle fields of the Saale and the Elster. The great high way to the north crosseth is field. Right between the villages of Podelwitz and Gobschewitz it passes the frontier between the present kingdoms of Saxony and Prussia: it crosses the Löberbach by Zschölkau near where the Swedish baggage was parked during the battle, and further on we pass Wölkau on the right, where the army camped the night before. It was along this road that Napoleon himself travelled on the 14th and 15th October 1813 coming from Duben, and some of his troops followed, the last on the 16th and made good their way into Leipzig under cover of Dombrowski's division holding Wiederritzsch.

Duben is twenty miles from Leipzig. A tablet let into a wall on the north side of this town reminds us that the King of Sweden and Elector of Saxony joined forces here three days before the battle of Breitenfeld. At Wittenberg twenty-one miles further, we cross the Elbe, and the road leads on nearly straight to Potsdam forty-two miles more. This was the line of advance of Davoust's Corps, and

Napoleon's Headquarters after Jena. Wittenberg was reached the 23rd, Potsdam the 24th and Berlin the 25th October. At Potsdam in the Garrison church is the tomb of Frederick the Great. Napoleon visited this in 1806, and said "If he had been alive I should not be here." In the church are preserved many captured colors, but none so old as Frederick's time are extant.

At Potsdam too is the Mausoleum of another great Frederick, the Crown Prince of the War of 1870-71, and of his Empress, our Princess Royal. Frederick the Great's palace "Sans Souci" is kept much as he left it and is shown daily to visitors. Potsdam is one of the stations of the Prussian Guard Corps. Another is Spandau fourteen miles further on. This fortress surrendered to Marshal Lannes on the 25th October 1806. Its old fortifications are about to be demolished. Spandau is only ten miles from Berlin nearly all through streets. Approaching the capital either from Spandau, or direct from Potsdam, one must cross the *Sieges Allées* at the north end of which stands the Column of Victory, and one enters the old town by the *Brandenburger Thor* opening on to the famous *chaussee* "*Unter den Linden*" at the far end of which is the monument of Frederick the Great. Further on near the royal palace is the memorial of the war of 1870-71.

On the south side of Berlin is the large *Tempelhofer Feld* where the French army drew up at the end of the wonderful campaign of 1806. The advance from Bamberg, including the passage of the *Thuringer Wald* and the battles of Jena and Auerstedt, was accomplished in the short space of nineteen days. The distance by road is, without any divergence, 260 miles, about the same as from the Yalu river to Mukden. The distance from Jena to Leipzig is little over 50 miles; to visit all the battlefields, including those round Leipzig, one must travel at least three times as much, but where else could one find in so short a space so many places of military interest? It is the peculiar privilege of this favoured tract to have been the scene of the exploits of the *three* greatest captains of modern times.

To Englishmen unaccustomed to much level land at home, and whose recent wars have been mostly in broken or hilly countries—even on the plains of Delhi we had the 'Ridge'—a striking feature of all these fields is their flatness. Most of the battlefields of the Continent are open level plains, unbroken by hedges. On many German battlefields we find a

"*Galgenberg*," that is "Gallows hill;" this as a rule is no hill, but merely the highest spot on ground that slopes so slightly that one may have to examine it closely to be sure that it slopes at all. Likewise the 'ridge' on the field of Breitenfeld is only where the ground is highest on a very gently sloping plain. The high roads in Germany are good: the same cannot be said for the country roads, and to visit Rossbach and Lützen fields one must traverse some for bicycles decidedly bad. Living in the country inns a cyclist in Germany can do himself on about 5 shillings a day. In Thuringia there is a cluster of small states, and on passing their frontiers, as also passing from one province to another of Prussia, the traveller finds the kilometre stones counting in the opposite direction. If any officer on leave in Europe wishes to make a cheap and instructive military tour, he could not do better than take his bicycle and visit these battlefields of the Elster and the Saale.

MOUNTED INFANTRY TACTICS, IN HILLY AND
DENSELY-WOODED COUNTRY SUCH AS IS
MET WITH IN UPPER BURMA AND THE SHAN
STATES.

CAPTAIN J. D. MACPHERSON—91ST PUNJABIS.

"To Conquer, Surprise" SKOBELEF.

The British Expedition of 1885 resulted in the annexation of Upper Burma and the deposition of King Theebaw. The Burmese Army, at the best of times, merely an armed rabble, left leaderless and uncontrolled, disbanded itself, taking away the arms and equipment supplied by the late King. Large numbers of these armed men, some few from a feeling of loyalty and patriotism, more in the hope of loot and rapine, formed themselves into guerilla bands. Under the leadership of men elected by themselves, they proceeded to various parts of the interior, taking possession of the country, and killing and looting on all sides.

In order to suppress these dacoit gangs, small moveable columns of Infantry, sometimes accompanied by Mountain Artillery, were sent out in every direction and posts were fortified in the more important places to serve as bases from which they could operate. These columns, hampered as they were by long trains of transport, moved slowly, and though frequently they came across signs of the enemy in their neighbourhood and even into actual contact, the results attained were insignificant in comparison to the efforts made. Flanking parties detailed to rush round and intercept the enemy, who usually fired on the point of the advanced guard and then bolted, were occasionally successful in causing a few casualties, but the actual effect of these few successes on the suppression of dacoity was really nil. The fully accoutred British or Native soldier had very little chance of coming up with the guerilla born and bred in the jungle, whose equipment consisted of the scantiest amount of clothing, his arms and perhaps two days' rations, that is to say, a couple of pounds of uncooked rice tied in a belt round his waist.

The villagers though often friendly to their would-be protectors—the British—were, however, far from averse to propitiating the dacoits with information as to the probable movements of the columns. This information was given in order to ensure the friendliness of the dacoits should they visit the village at some future date, when the troops moved away from the neighbourhood. A single example of what occurred on many occasions will amply illustrate this difficulty, with which column Commanders had to contend. The column which halted in a village would receive information from the headman that a gang of dacoits had billeted themselves in another village some few miles off. In all probability a guide would also be voluntarily furnished and the column would move off with all despatch to the village named; only to find on arrival that the dacoits had gone away some hours before. On making enquiries it would be found that the headman, though he had actually volunteered the information, as to the enemy's whereabouts, had previously sent a messenger to the dacoit Boh to let him know that the column was about to attack him. The reason for this extraordinary duplicity was not hard to find out. The headman was, from former experience in his own or another village, perfectly well aware that should the column fail to capture the dacoits, they would move on in pursuit leaving the village unprotected, then sooner or later the dacoit leader would seize an opportunity to attack and burn the village in revenge for its neglecting to give him information. It was undoubtedly true, as stated by headmen when striving to excuse themselves, that as long as the column was actually present the village was safe from attack, but the moment the column moved on, the dacoits easily circumvented it, and returned to burn the village and to kill and torture the inhabitants, should they have proved their hostility, by not furnishing information of any meditated attack by the British.

The small force of cavalry employed did excellent work—both mounted and dismounted—in the very small part of the dry area suited to cavalry tactics, but in the scrub jungle and the hills they were handicapped by the size and unwieldiness of their horses and the unsuitability of their equipment. They in fact, struggled gamely on throughout the war in a rôle for which cavalry were never destined. The rough rocky soil in the districts otherwise suited to the employment of cavalry caused numerous casualties among the horses from foot

lameness, and being unacclimatised they did not stand up against the hard work like the local ponies. The tired columns of Infantry marched day after day, week after week, north, south, east and west, from village to village, camp to camp, through *kaing* grass, bamboo and cane brake, always tramping on; the monotony only broken by the occasional sniping of advanced and flank guards with the addition of new names to the growing list of casualties, and but seldom killing or capturing a dacoit.

Officers and men under these harassing and depressing conditions were becoming discouraged and steadily losing their morale and verve. The continuous marching and counter-marching, bivouacking and camping in the malarious Burmese jungles were beginning to tell on the health of the troops. Fever-stricken and wearied they had gradually become dispirited by the want of success, attending even their most splendid efforts. A change came suddenly. An officer commanding the head-quarters of a detachment, received information that one of the posts furnished by the detachment was surrounded and hardpressed. Time was everything if the post were to be saved. Hastily impressing ponies, of which fortunately large numbers were available, he mounted the entire relieving party and sent them off. Covering the ground at a fair pace despite the numerous casualties occasioned by differences of opinion between the ponies and their untrained riders, the relieving party arrived in time to save the post. Driving off the dacoits, they handled them very severely in the pursuit, killing and capturing a large number.

This first party continued operations mounted, and was so successful that the authorities decided, wherever feasible, to raise companies of Mounted Infantry both British and Native. This important decision was given effect to with great promptitude and in a very short time most of the columns had attached to them companies of Mounted Infantry, armed and equipped a little faultily at first from want of experience, but from their superior mobility alone, forming one of the greatest factors in the whole successful suppression of dacoity which slowly yet steadily followed their employment. Arms of numerous sorts and descriptions were experimented with, at first the British Mounted Infantry were armed with the Martini-Henri rifle and bayonet and the Native troops with the Snider, that is to say the arms with which they were provided before being mounted. These rifles were found to

be far too unhandy in the jungle and even the best shots could never be certain of hitting a flying figure rushing through the bamboo clumps or scrub. Buckshot cartridges were tried in the hopes of improving the shooting, but were found equally ineffectual, the pattern made by them being very large, and the shock on impact very small except at the closest quarters.

The long rifles were too heavy to use from the saddle, in pursuit, as they could not be fired with one hand and using both entailed letting go the reins and so losing control of the pony. Later Martini-Henri and Snider carbines were issued and found most satisfactory if used as rifles at long ranges and practically as pistols when close up or hand to hand. In pursuit the men whenever possible rode right up alongside the retreating enemy and fired point blank with one hand. Reloading caused serious delay and revolvers would no doubt have been more effective weapons, but being considered dangerous weapons in the hands of unskilled men they were never given a fair trial. Sabres were provided as an experiment, but were soon discarded. They were quite useless in the hands of men untrained to use them and only proved an impediment to free movement, besides adding to the already heavy weight carried by the ponies. Regulation lances were impossible weapons to carry in the scrub and forest and the opportunities for using them in such country were few and far between. On the open downs of the Southern Shan States, however, the lance or rather a compromise between a lance and a spear was found to be invaluable both in attack and pursuit.

The type of country in which our troops had to operate had more influence on their tactical dispositions and formations than the customs and habits in warfare of the enemy opposed to them. The operations were carried on in three areas, the physical features of all of which are absolutely distinct. A short description of these areas is necessary to make clear the suitability of the formations and manœuvres employed.

The areas mentioned are :—

(a) The practically rainless area in the districts of Mandalay, Meiktila, Myingyan and Shwebo, where the ground is rolling and rugged; covered with low scrub jungle, diversified occasionally by long stretches of rice fields and other cultivation in the valleys. Here and there a fairly high hill

such as Popa or Yankintaung rises solitary from the surrounding country. In the cultivated stretches villages are numerous and therefore water and forage plentiful. In the scrub jungle the going is usually rough, the ground covered with broken shale and limestones which causes many casualties among the ponies and horses, more especially the imported ones, which unlike the Burman pony, are not accustomed to going unshod. Every man should carry a set of spare shoes and a farrier accompany each party going out for any length of time.

(b) The wet forests on the hill forming the natural frontier between Burma and the Shan States, such as that from Thabeitkyin to Mogok and from Fort Stedman to Keng-tung. These vast ranges of hills extend for many hundreds of miles in parallel lines, running North and South. They are covered with dense tropical forests; in parts, impassable even for infantry without the aid of pioneers. In this region villages are few and far between, but water and forage are available beyond all possible requirements. From the scarcity of inhabitants guides are hard to obtain and when obtained seldom know the tracks at any distance from their own villages.

(c) The grass-covered rolling downs such as the plateaux which extend from Taunggyee to Thamakhan, from Fort Stedman to Karenni and from Keng-tung to our frontier.

On these downs the going is as nearly perfect as possible and no forest or jungle impedes movement and view. The obstacles are of the slightest, a series of deep nullahs or a long stretch of swampy rice fields at the most. Forage and water are to be had everywhere in abundance. The greatest caution in feeding the ponies must be exercised as surra and anthrax are rife. The grass from which infection is most to be feared is that cut in the neighbourhood of villages where Panthay traders are in the habit of halting with their mule caravans. Bamboo leaves "an excellent and safe substitute for grass" (Watson) should always be given when any doubts are entertained as to the sanitary condition of the latter.

The arms of the enemy were usually of the most primitive description. Most of those who had been soldiers in King Theebaw's army were armed with flintlock or percussion tower muskets,

Arms of the enemy.

here and there a leader might be found in possession of a double-barrelled rifle or gun and perhaps a revolver. The rank and file recruited from the villages were armed with the ordinary Burmese fighting dah, some few of them with muskets also.

Panjies, that is to say, sharpened pieces of male bamboo of varying lengths from three or four inches to as many feet in length, planted in the ground and more or less hidden were the most common obstacles met with, they often caused very serious wounds and at times the points were dipped in poison. Pits covered over with branches of trees and grass to hide them, the bottoms of which were stacked with panjies, caused many casualties in the Wuntho district.

The cutting down of bamboo clumps across the line of advance to a width of a hundred yards or so was a formidable obstruction and often delayed a column for many hours. This form of obstacle must be approached with great caution as the enemy are wont to take courage from their immunity from being charged and their own invisibility and often show a bold front. The cut down bamboos should not be approached from the front until parties have gone round the flanks and driven off the enemy or ascertained that all is clear.

(a) The tactics to be employed by the Mounted Infantry, in country such as that of the dry districts, are simple and effective.

In the advance of a mixed force of infantry, mounted infantry and mountain guns; the mounted infantry if in sufficient strength, should screen the whole front and flanks of the force, and the rear also if there is the slightest possibility of an attack in that direction. The infantry making the usual arrangements for their own protection and that of the guns. The men should be extended in pairs as widely as is compatible with good inter-communication and the thorough searching of all the ground over which they have to pass. This screen should be closely supported on its flanks by all the remaining available mounted men and in the centre by infantry.

This formation is necessary so that in the event of meeting the enemy in small numbers, the flank parties may be handy to effect a surround by working round both flanks or if the enemy be in force, by threatening his flanks and giving

the advanced guard time to make the necessary dispositions for attack or defence. The mounted Infantry must be careful not to become so closely engaged as to necessitate changes in the dispositions made by the column commander in order to extricate them. When the enemy are met with in small force the centre should make every effort to hold them and not drive them back, until, from the sound of cheering and bugles they are informed that the flankers are charging, when they should charge too, supported by the infantry.

Another system is to advance with the mounted Infantry screen divided into groups linked by connecting files. This system finds few advocates for its use. The advantage claimed for it is, that, in the event of being ambushed, men in groups have more confidence and are less likely to panic and to rush back, bringing no information, than men in pairs.

The disadvantages, however, are so great that they far outweigh the one advantage claimed. Experience has shewn that men in groups are so confident of their safety, that unless supervised to an extent that is practically impossible they march without taking any proper precautions. They are apt to overlook the reconnoitring of places not actually in the direct line of their advance; they move more slowly than pairs, as even a slight obstacle delays the whole group, they make a larger target to fire at and the connecting files are apt to keep too close to one or other of the groups they are supposed to connect and so lose touch; that should a group get ambushed and panic they cause far more confusion than only a pair or so. With either system, should the enemy be met with in small numbers, the flankers should show no hesitation nor wait to fire, they should work round at the gallop if possible, and ride right home using their carbines as pistols at as close quarters as they can get to.

In a rear-guard action, the screen system is equally effective. On the pressure becoming unduly heavy in a retirement, but before they are absolutely involved, the screen should retire by alternate sub-sections or files. The sub-sections or files retiring first should take up new positions with a view to covering the retirement of those remaining in front. The flanking parties should make every endeavour to ambuscade the enemy when occasion and suitable ground offer an opportunity. In jungle warfare these opportunities

are not infrequent. "Hillmen and savages of parts of Africa dwelling in the bush are very difficult to meet in open ground, they stick to their cover obstinately; such antagonists never give the troops a chance, unless, in hope of loot or excited to it by seeing troops fall back, they rush out carried away by an incontrollable impulse." This extract from Callwell's *Small Wars* applies equally to Orientals and during a real or pretended retirement, flanking parties, if led boldly and with determination, will meet with great and immediate success and give the enemy a lesson not readily forgotten.

- Attacks on villages or positions should be carried out on roughly the same lines as an advance across country. On reaching the vicinity of the enemy, the Mounted Infantry in two parts should proceed by circuitous routes to the flanks and far-side of the village and guard all the exits, the infantry and guns meanwhile approaching as near as possible without incurring the risk of being prematurely discovered. As soon as the Mounted Infantry are in position, they should by some pre-arranged signal such as a bugle call or by opening fire inform the Commander, who will advance on the village (under cover of artillery fire if guns accompany the column) and rush it, without stopping to fire, as soon as the troops are near enough to charge.

Another method is practically the reverse of the above; instead of the mounted infantry surrounding the flanks and rear of a village so as to cut off the escape of the enemy, they do so to attack, the main body being disposed of so as to ambush the enemy when driven out by the Mounted Infantry. To enable this to be done successfully, the enemy must only be in small numbers or the Mounted Infantry in great strength.

(b) In the forest-covered hills such as those forming the natural frontier between Burma and the Shan States Mounted Infantry are useful from the mere fact of their superior mobility. When they can be used to surprise the enemy by a series of rapid marches, to assist a post urgently requiring help or for transmitting information rapidly, they compensate fully for the trouble they often cause on the march and when halted. Where roads are non-existent and columns have to march along jungle hillside tracks in single file, the Mounted Infantryman and his pony cause, the perhaps already attenuated column to increase in length. This is a grave consideration to the Commander of the force who has, say,

only 200 rifles in all to protect the non-combatants and transport, and a large proportion of the Mounted Infantry-men are *pro tempore* non-combatants as horse-holders. In camp or bivouac the Mounted Infantry ponies take up a lot of ground and necessitate the occupation of a larger area than is sometimes compatible with safety.

The tactical advantages gained from the use of mounted infantry in such country are:—

- (1) They can reconnoitre to far greater distances than infantry.
- (2) In the event of a column being attacked the Mounted Infantry if handled boldly can, often by a quick dash past, interpose themselves between the enemy and the village to which they belong.
- (3) Where signalling is always difficult and generally impossible, they are the only means by which one column can send information to another with rapidity.
- (4) Their superior ability to make a long and rapid march to surprise the enemy or to occupy previously a position from which the enemy might hold up the column, or to succour an outpost.

The disadvantages are:—

- (1) The fact that on a narrow hillside path where two ponies at most can stand abreast a great many men are practically rendered non-combatants from having to hold the ponies. A hook on the back of the saddle over which the reins of the pony in rear can be put frees more men but leaves the ponies uncontrolled should they try to stampede under fire. It is a choice of two evils and the latter is the lesser evil of the two.
- (2) The increased area of ground that has to be occupied in camp and bivouac.
- (3) The extra work entailed by having to guard the men when out cutting grass. (The guards have to be numerous in dense jungle).
- (4) The guards that have to be furnished when the ponies are watering and going and returning.

- (5) The liability of fire from snipers causing the ponies to stampede, more specially at night. In attacking a stockade, village or position in the forest the only way is to dismount and rush it. When the village is rushed if the enemy at once bolt out on the far side they should be followed with caution; as the hasty retreat may only be a device to lure the troops into a trap. In an attack or on the defensive in a retirement the ponies must be kept where cover is best. Fighting on foot, alone, is possible on the steep hillsides.

(c) The ideal country for the employment of cavalry or mounted infantry is on the plateaux of the Southern Shan States. The men must be armed, in addition to the carbine and bayonet, with a short lance or spear. Wide extensions can and must be made. The country is so open, that it is nearly always possible for the men to move in a rough semi-circle, with the convexity towards the enemy and all widely extended so as to range a large area of country. In all warfare, attacks by surprise are essential to success, in country so open, there is no necessity to employ any slow methods if sufficient mounted men are available. Experience in past wars has shewn that nothing is so disconcerting or harassing to troops, disciplined or otherwise, as a series of blows struck within a short period of time at places scattered widely apart. On untrained and undisciplined troops the moral effects of a series of rapid blows is incalculable, the lack of security at any time becomes insupportable and speedily destroys the "morale" of even the bravest savages.

The tactical disposition of a force consisting of Infantry and Mounted Infantry should, when advancing on open ground, differ somewhat from that used in scrub jungle. The infantry in the centre should be preceded by infantry scouts in an extended line only. The mounted infantry in two parties operating well away to both flanks, each party furnishing its own screen to do the scouting.

The force should take every advantage of cover afforded by the undulations of the ground, but keep in touch so as to ensure mutual co-operation in the event of coming into contact with the enemy.

On encountering the enemy, if they are in strength in front of the infantry, the infantry advance should be made

slowly and every endeavour made to hold the enemy in order to give the Mounted Infantry time to take up suitable positions. These positions should be such as to allow of effective fire being brought to bear on the enemy and such as will allow of an immediate charge being made on the enemy when broken by the advancing infantry. Such position will be equally serviceable should the infantry be repulsed or meet with stubborn opposition; and the mere fact of threatening the enemy's line of retreat will greatly affect the spirit of his defence.

Should, however, the main body of the enemy be found opposing one of the flanking parties of Mounted Infantry, every endeavour should be made by a feigned retirement to draw them in pursuit towards the infantry. The party of Mounted Infantry on the reverse flank manœuvring so as to bring a flanking fire on the enemy or equally to take advantage of the enemy getting scattered and strung out in their fancied pursuit to charge them. If troops are skilfully handled it is possible so to advance in this type of country that the enemy may at first only be aware of the presence of that party which is in actual contact with them.

Villages surrounded by swampy rice fields for any distance are the most difficult to surprise. In country such as that now under consideration, where rice villages lie in valleys between the deeper dips of the downs, the mounted men even if they march off at the same time as the infantry can, by keeping along the edge of the downs, reach positions on the rear and flanks of the village to be attacked, in time to head the enemy off when driven out by the infantry. If such a village has to be attacked by Mounted Infantry alone the advance should be simultaneous from all sides, care being taken that the parties all attack at the same time, the Number Threes taking all the ponies to some appointed place, along the road or path to the village. A small party should also be detailed to protect the ponies and block the road on the other side of the village (there is usually only one road or path running right through).

Night attacks in the usual acceptance of the term are rarely successful in such country as the jungles and hills of Burma and the Shan States, but parties of mounted infantry can sometimes make a successful coup by marching rapidly to within two miles or even less of the village to be attacked so as to arrive in the bivouac there at dusk. During the night the usual precau-

General.

tions should be observed, men remaining accoutred, and keeping their horses saddled.

Immediately on the first streak of dawn, earlier if the going is good enough, the party should march and proceed to the objective as rapidly as possible, the place of the infantry support in the centre, used in mixed columns, being taken by mounted men.

In a company fifty strong, the dispositions, conformably to the nature of the ground to be traversed, should be roughly as follows:—

Six pairs for the screen	...	...	12 men.
Flanking parties, 10 men each	...	...	20 „
Centre party	...	...	18 „
<hr/>			
Total	...	...	50 men.

On reaching the immediate vicinity of the village the flanking parties should proceed as rapidly as possible to the sides and rear of the village, the screen and centre party advancing on foot with bayonets fixed, direct on the village itself. The advance to be made without noise or firing until close up, when one volley will be fired and the charge carried right home. Larger parties should not fire but charge at once, as stopping to fire sometimes causes a serious delay and many unnecessary casualties. In case of a repulse, a rendezvous should be appointed in some conspicuous position, easy to reach, but if the information as to the enemy's numbers, nature of the village and its defences, etc., has been clear and correct and the attack dashingy conducted, the chances of a repulse are infinitesimal. In pursuit the enemy should not be given a moment to rally, the front line of the attack should push forward to close quarters and the flanking parties make every effort to close and even head off the enemy.

Before a surprise march, orders to the village headman for a large amount of supplies to be delivered within a certain number of days and news carefully disseminated that the force is going to halt for a week or so will generally result in lulling the enemy into a false idea of their security—marching a few miles in the opposite direction to the objective is seldom labour wasted where the enemy's spies are numerous.

When halted in open country or scrub jungle, patrols of mounted infantry should always be sent out at dawn to reconnoitre the surrounding country. Two to three hours before dusk patrols should be sent out to see that all is clear, patrolling by mounted men should of course go on throughout the day, but the dusk and dawn patrols should always go out at the above hours. Under no circumstances whatever should the parties sent out in the afternoon run the risk of having to return after dusk. Cossack posts of three to six men, well hidden under cover will greatly assist in maintaining the security of the force in rear and in giving timely warning to the out-posts of any attack intended. For these Cossack posts men should be specially selected for their intelligence, keenness of sight and hearing as a slack or stupid post is in constant danger of being cut up. Cossack posts are absolutely and entirely to be used for purposes of observation and are under no circumstances to attack or attempt the capture of even small parties of the enemy.

If the enemy become aware that a certain position is daily occupied by a post, they will try to ambush it there, for this reason exactly the same position should not be occupied every day. When Cossack posts and patrols are returning to camp they should halt occasionally under cover in suitable places and turn about, waiting a reasonable time to see if they are followed.

Should through some accident or incident a patrol not be able to reach camp till after dark, they will halt some three hundred yards or so from the sentry line, and lie down under cover, sending one man on to say they are coming. This man should continually shout out the name of his regiment or the countersign if there is one. Neglect of this precaution has often resulted in the sentry mistaking the patrol for the enemy and firing on it, especially where snipers are in the habit of coming down to the neighbourhood of camp after dusk. Permanently fixed signalling stations in suitable positions are absolutely necessary in order to communicate with columns. Every column should, when halted, even if for a few minutes only, endeavour to pick up the fixed stations by heliograph and ask for any information or orders that may be intended for them.

336 REGISTRATION OF TRANSPORT ANIMALS.

A BRIEF DESCRIPTION OF THE SYSTEM BY CAPTAIN F. W. HAWKS, SUPPLY & TRANSPORT CORPS.

One may explore that fount of all knowledge, the Encyclopædia Britannica, in vain for any information regarding the subject of Registration as applied to the process of methodical selection and record of animals required for Field service. Any other form of registration is freely commented on:—Judicial proceedings, land, bills of sale, parliamentary, *et hoc genus omne*. In order, therefore, to inform those who may wish to know something of this very important subject, and in the hope of awakening the interest of those who have not at present noticed its progress, I am induced to put forward this brief description of the system and objects of registration in general, as practised in the civilised world at large, and its application to certain parts of India in particular.

2. *Meaning of Registration.*—The registration of animals for use in war is their actual selection and regular record in peace, together with the names of their owners and other necessary particulars, so that they may be forthcoming with the least difficulty and delay when the emergency arises. In most countries in the world registration of animals is almost entirely confined to the preparation and maintenance of a record regarding horses, but it may be, and, in some parts of India, is applied to the selection of any class of animal, suitable for transport purposes, such as mules, ponies, bullocks, camels, donkeys, etc., and to inanimate objects such as vehicles (carts, ekkas, etc.), or to human beings, such as men accustomed to handling animals, for employment as drivers, or artificers, or to men with any knowledge of the treatment of minor diseases, such as camel-doctors, etc.

3. *Necessity for Registration.*—To gauge with all possible accuracy the resources in the country; to systematize purchasing and hiring operations; to obviate, to the extent possible, hardship to the people, by spreading the requisitions of animals over a large area; to ensure the provision of only suitable animals, when required; to localize trains and corps to be raised on mobilisation, and thus facilitate payments to relations of men on service, and the final adjustment of accounts; to work hand-in-hand with the civil authorities, with whose assistance alone can any satisfactory results be obtained; these are the principal objects of a regular method of registration.

4. *Difference between Enumeration and Registration—*

Enumeration is the elder brother of Registration; and is itself divided into two distinct categories:—the one a mere census, a counting of heads simply, without discrimination as to suitability, or unsuitability, fits or unfits; the other, a most important preliminary to Registration, consists in the formation of a definite decision as to the normal proportion of fit to unfit animals in any defined area or district.

5. A brief allusion to Registration in the principal countries in the world will not be out of place. (I take my facts from a very able lecture recently delivered in the Royal United Service Institution of England, by Major J. Moore, Army Veterinary Department.)

Russia:—The system is first Enumeration, then Registration, including classification for the purposes for which the animals (horses) are suitable. Their acquisition, when required for war, is compulsory, though there is a limit fixed to the number taken from each individual owner.

Germany similarly classifies every horse in the country with a view to acquisition on the outbreak of war.

France extends the system to mules, wagons and carts also, and by means of an annual census, maintains an accurate register of her resources for war.

In Austria a quota to be provided from each district on mobilisation is fixed in peace. Italy registers and periodically inspects, classifies and assesses the value of all horses. In Japan, the Government, while assisting breeders, reserves to itself the right of buying at market prices any horses fit for military purposes.

In England, the payment of a registration fee is resorted to, and a reserve of 20,000 horses is held by this means to meet the requirements for war. Major Moore, in his lecture, advocated the extension of registration throughout Great Britain and Ireland to show the classification of horses, as in other countries: by means of continual inspection also, contagious diseases could be to some extent subjected to control, if not eradicated altogether. Payment of a retaining fee could be abolished.

6. To return now to a description of the general system of registration as practised in some parts of * India:—Assuming that the total requirements of any particular class of animal, say bullocks or ponies, for instance, are

* N.B.—The Punjab and North-West Frontier Provinces.

considerably less than the country under registration is able to provide, the first step is to map out the whole area in circles or districts, and to apportion the animals to be acquired for war purposes among minor divisions, sub-circles and villages so as to cause the least inconvenience to the people by their withdrawal. These requirements will be classified into immediate (*vis.*, on the outbreak of war) and subsequent demands; the latter to supplement, or replace casualties in the former. Selection from amongst fit animals must now commence. This operation, honestly performed, ensures absolutely that only animals which are habitually employed on work similar to that for which they will be required in war, are taken, *e.g.*, it obviates the withdrawal of plough-bullocks for cart work, etc., a thing which would undoubtedly often happen in any hasty collection of animals, and which, in the case of an agricultural population, must necessarily entail much suffering. Registration now proceeds by different methods. If the class of animal required exists in greater numbers than necessary to meet all war demands, it is sufficient to fix a quota from each village towards the provision of the total; if, on the other hand, the requisite number of animals does not exist in the country, it will be necessary to register every fit animal in order to provide for time of need.

7. *Definition of the various methods of registration.*—The whole aim will be to make as exact arrangements as possible beforehand so that owners may know what will happen in war-time, and on what terms they will have to part with their beasts. An important point, then, is to ensure identification of animals, and the simplest way to effect this is by branding them. But branding being a disadvantage, as detracting from the sale value of the animal, it becomes necessary to offer some inducement. The *quid pro quo* offered is exemption from impressment for hire during peace, and—an important point—by the definite fixing of the price to be paid when Government requires the animal. This price will be the ordinary market value, agreed upon by the owner and the Registration Officer previous to branding, which may include a certain enhancement, also agreed upon at the same time, as compensation for the inconvenience which may be caused by the sudden withdrawal of the animal. Under a compulsory system of registration, the branding method ought to prove a fair success, for it may be explained to the owner that, as he will have to give up the animal,

when required, *nolens volens*, it is better to agree upon the price while he has a voice in the matter than to leave it to be arbitrarily fixed later on. It may be, and has been, argued that the owner of the branded animals has not sufficient advantage over the possessor of an unbranded one to induce him to allow this means of identification; practical trial only can decide this and should it turn out to be the case, then the question of inducement will need reconsideration. However it will not be desirable to make the branding system too popular, lest it should interfere with the success of the next method.

8. The "token" system. This system is to give the owner some object, such as a metal disc, as a sign or "token" that his animal has been registered and that it will be allotted to a specified unit on mobilisation. The "token," which should be of a non-perishable nature, will accordingly show with sufficient clearness the unit to which the animal will belong, its number in the unit, and the Equipping Station of that unit. On the way to the latter, the owner will pass through the nearest Collecting Centre (previously indicated). Here he will meet the purchasing or hiring Committee, and receive a reward for his services, provided he fulfils certain conditions, to which he has agreed at the time of accepting the token. These conditions are in the main as follows:—

- (1) That the animal shall be allotted to a specified unit.
- (2) That the owner will produce the animal, when required, for purchase *or hire* at the discretion of the Transport Registration Officer.
- (3) On the production of each animal the owner shall receive a reward of Rs. 5, provided that, if the animals be hired, the owner is to produce the requisite number of attendants.
- (4) That the owner will not sell or transfer the animal without the consent of the Transport Registration Officer, and that he will produce it for inspection whenever required to do so, or will satisfy the Transport Registration Officer that he has reasonable grounds for not producing it.

In return for this agreement on the part of the owner, the "token" animal will not be liable at any time to impressment for hire, except with the consent and through the agency of the Transport Registration Officer.

9. It will be noticed that the effect of both the branding and "token" systems is to allot animals to some particular specified unit to be raised when required; this simplifies matters very much when the time for the collection of the animals arrives.

10. An "ordinary" animal is one that is neither a branded nor "token" animal. If the full quota from any circle, sub-circle or village, cannot be obtained in branded and "token" animals, the balance is made up from "ordinary" animals. The registration of an "ordinary" animal consists simply in noting particulars regarding it in a register which is revised annually. The judge of the fitness of an animal in the first instance is the "Registration Assistant" (a native), but the Transport Registration Officer at his inspections, which he may make whenever he considers necessary, will satisfy himself that all animals are fit and suitable in every way for field service. Should an animal die or be struck off the register, for any reason, the village to which it belonged must provide a substitute to be registered without delay:—this ensures the requisite quota from any village being forthcoming whenever called for.

11. *Impressment.*—To sum up. Branded animals may not be impressed in peace, but may be acquired by purchase in war for the unit to which they have been allotted.

"Token" animals may not be impressed in peace except with the consent of the Transport Registration Officer, and may not be impressed for war unless the owner fails to produce them for the unit to which they were allotted.

With the above exceptions, any animal may be impressed under the authority of the Local Government for hire, but unregistered animals shall not be impressed for war unless the Local Government so directs. This puts a stop to indiscriminate impressment, and confines the first collection of animals to the quota prescribed for each circle.

12. *Method of acquisition of animals.*—Animals may be either hired or purchased, but it is laid down that an animal, taken beyond the limits of India without the consent of the owner, shall be purchased, and of course if an animal is branded it must be purchased.

It is usual to arrange for the purchase of every class of animal except camels. A special exception is made in the case of camels, which it is undesirable to purchase. It is well known that camels will, on the slightest provocation, or on no

provocation at all, die in swarms. This peculiarity is scientifically always traceable to some form of disease, but it is no doubt largely due to the hypochondriac disposition of the quadruped, which can with difficulty be induced to take a brighter view of life. It has been practically proved however that the presence of his owner or his owner's representative, as his attendant, does render him a little less wishful to satisfy his craving for eternal rest; hence the desirability of arranging to hire rather than to purchase camels. Hence also the insertion of the italicised words in clause 2 of the "token" agreement, and the necessity for inducing camel owners to register under this system.

13. Hiring and purchasing Committees will usually consist of the Transport Registration Officer, the purchasing officer, the prospective Commandant of the unit under formation, and two non-official native gentlemen nominated by the Collector of the district, who also appoints the president: three members form a quorum. The president keeps up a record of the proceedings, and all disbursements are made in his presence.

14. There is one very important improvement, which might be introduced in Indian registration: this is that the registration staff should include Veterinary Officers, and a number of trained native veterinary assistants. I would distribute about three of the former in central positions in the country, and would allot one of the latter in peace for each unit to be raised in war. The advantages are obvious; I give a few of them—

- (a) The checking of contagious disease, if not its actual eradication in time. These diseases are unfortunately very prevalent, and the appearance of one of them at a critical moment would paralyse all arrangements.
- (b) The valuable help rendered to the people of the country, who would thus receive a very substantial *quid pro quo* in return for the registration of their animals. I would have each veterinary assistant continually going round his districts and would provide him with instruments and a small stock of medicines. I can conceive of nothing more calculated to make registration popular.

The cost would be small, trivial as compared with the results to be obtained. Sir Denzil Ibbetson, in his speech at Lahore on the 4th May 1905, stated that there are

13,334,648 Agricultural cattle in the Punjab and 103 non-gazetted veterinary officers are employed, or about one to every 130,000 head of cattle. It cannot be doubted therefore what a boon any extra aid would be.

15. The system, of which the above is an outline, may be found laid down at length, and in all the glory of legal phraseology in the Punjab Military Transport Animals Act (No. I of 1903), to my mind the most enlightened, most progressive piece of legislation produced for years. This statement may provoke a smile from those who do not realize the importance of the object in view, or who, whether by non-comprehension or wilfulness (and I am sorry to say that there are some in the latter category) are inimical to the methods by which it is to be attained. To the last class I say nothing, and I would only remind the others, "By ignorance we know not things necessary; by error we know them falsely."

BY MAJOR R. G. BURTON, 94TH RUSSELL'S INFANTRY.

The centenary of great events always appears to be an opportune occasion for recalling their history, relating their details, and reviewing their effects. Perhaps it is that the lapse of a hundred years gives ample time for the full development of the consequences of events, which are, moreover, more likely to appear in their true light when the great figures of the drama have long passed away into the dust, together with the passions and struggles of their generation, and when they can be viewed dispassionately from the point of perspective lent by time, free from the glamour or the shadow cast by close proximity. A hundred years ago the ultimate effects of the battle of Trafalgar could not possibly be even dimly discerned in all their gigantic proportions. Who could have foretold that its result, direct or indirect, would be the building up of the greatest Empire the world has ever seen, founded on the power due to the mastery of the sea? Probably at the close of the year 1805 it was generally considered that Trafalgar was quite eclipsed by the great battle of Austerlitz, on hearing of which Pitt, already on the brink of the grave, turned the map of Europe to the wall, saying that it would not be needed for ten years.

Napoleon was then at the zenith of his power, and it seemed as though the sun of Austerlitz, which shone so brilliantly upon his arms, were destined to light him to universal Empire in the old world. When Napoleon Bonaparte was crowned Emperor of the French in 1804, he was at peace with all the world except Great Britain, for the invasion of which he had assembled a numerous and well-equipped army at Boulogne. In July of that year his troops swore allegiance to the newly-made Emperor, seated in the iron chair of Dagobert in the midst of his vast camp, from whence, in the misty distance, he might discern, in imagination if not in reality, those white cliffs of Albion which marked the goal of his ambitions. From Boulogne he proceeded to Aachen, the ancient capital of Charlemagne, his predecessor in the Empire of the West a thousand years before. Nothing but the humbling of England appeared wanting in the triumph of his genius. "Masters of the Channel for twelve hours, we are masters of the world," wrote the Emperor, and there appears to be little doubt that his intention to invade England was real, although many

historians have averred the contrary. Certainly the preparations for a descent were as efficacious for carrying on a successful continental war, which, according to some, was the intention he cloaked under his scheme of invasion. He was not the last to entertain ideas as to the feasibility of such an invasion, and in this connection, and as throwing some light on the opinions of the Prussian General Staff, the following passage from the work of Count Yorck von Wartenburg* is of considerable interest:—"This plan shows his genius at its full height." The idea which underlay his landing was perfectly correct; it was a putting into practice of the highest rules of war, namely; "try to put your strong points as to time and space against the enemy's weak points." Napoleon's strength lay in his army and in war on land: England's strength consisted in its fleet and in war at sea; to attack her in such a way that his strength might be brought to bear, was, therefore, assuredly good strategy. Napoleon has been condemned because the execution of his plan is said to have been impossible. But if we remember all that has been declared impossible in the history of the world by contemporaries, and yet was achieved by the power of genius, who can say that a landing of his army in England would have been an impossibility for Napoleon. Hannibal's great plan of crossing the Alps and attacking Rome in Italy, and conquering it there, would perhaps be considered impossible now, if it had remained a plan only.

The fact that this landing was not effected and England not conquered, is generally considered by historians as the salvation of Europe, for one country at least escaped Napoleon's domination. I do not share this opinion. The states of the Continent suffered at the time too severely and directly from Napoleon's tyranny for them to realise that England had no less exclusively, though in a more practical and enduring manner, its own interests in view during that time, and by no means those of Europe. Had Napoleon entered England at the head of his army, his strength would on the one hand have been weakened thereby, and the Continent would have obtained greater freedom of action, and on the other hand England, shaken to its very foundations at home, would not have been able to concentrate, as it did, almost the whole colonial possessions of the world in its own hands, and the continental powers would now-a-days have a more equal

* Napoleon as a General. Published in 1902.

share of them." This is a plain exposition of Teutonic jealousy of our colonial Empire, and, perhaps owing to the same envy, the author makes no mention of Trafalgar in his book, as though that naval battle had no influence on the course of events on land.

The plans of the Emperor received a severe blow in the death of Latouche-Treville, his most competent admiral, who was succeeded by Villeneuve, an able commander who, however, was timid and lacking in enthusiasm. In April 1805 Villeneuve sailed for the West Indies, drawing Nelson and the British fleet after him, and returning in the following month to European waters, whither he was followed by the ships of England. In August the French and Spanish fleets were assembled at Cadiz, but Villeneuve remained there, unable to fulfil Napoleon's orders to liberate the Brest squadron, which was blockaded by an English fleet. Consequently the plan to sweep the channel clear of British ships, and so prepare the passage of the French troops to England, completely failed.

Whatever intention Napoleon had entertained of invading England was now dispelled. The Grand Army of England marched for the Rhine.

In November 1804 Austria and Russia had signed a defensive treaty, and in July 1805 the Austrian army was prepared for war with the Emperor of the French, whose recent coronation at Milan as King of Rome and subsequent demonstration on the frontier had constituted a menace to Austria. War was declared on September 3rd, and an army under Mack was concentrated at Ulm to oppose the advance of Napoleon, who crossed the Rhine with 200,000 men, and passed the Danube on October 9th. On the 20th Mack was surrounded at Ulm and forced to surrender with all his army to the conqueror, who, according to the journal of an Austrian officer, "in the uniform of a common soldier, with a grey coat singed on the elbows and tails, a slouch hat, without any badge of distinction, on his head, his arms crossed behind the back, and warming himself at a camp fire, conversed with vivacity, and made himself agreeable." Napoleon wrote to Josephine—"I have destroyed the enemy merely by marches."

On the 14th November his head-quarters were established at Vienna in the palace of Schonbrunn.

We left the allied French and Spanish fleets under Villeneuve at Cadiz, which they reached on 20th August 1805, where they were watched by Collingwood with twenty-six British ships of the line. On the 14th September 1805 Nelson embarked on board the *Victory* at Portsmouth amid the plaudits of his assembled fellow-countrymen, and sailed next morning at 8 A.M. to join the fleet off Cadiz. He reached his destination on September 28th at 6 P.M., the day before his 47th birthday, and took over command from Collingwood. Villeneuve, meanwhile, had received orders to pass through the Straits of Gibraltar, and proceed to Naples with the allied fleet and some vessels he was to pick up at Cartagena. Under him was the Spanish Admiral Gravina, in command of the fleet of Spain.

On the 19th October Villeneuve, hearing that Rosily had set out to supersede him, and to recall him to France to answer charges preferred against him by Napoleon, sailed from Cadiz with 33 ships of the line, 5 frigates, and two brigs. To oppose this force Nelson had only 27 ships of the line, having been obliged to detach some of his vessels to Gibraltar for water, but the French ships were ill equipped. Next day the British Admiral heard from his frigates, which had been on the watch near Cadiz, that the enemy had left port, and at daybreak on the 21st his watch descried the allied fleet just north of Cape Trafalgar. Villeneuve, retiring somewhat in shore, so as to be able to retreat to Cadiz, drew up his fleet in two long parallel curved lines, in the form of a crescent, the rear covering the intervals in the front line. The day was bright and fine; there was a heavy swell on, while a light breeze from the west favoured the British ships, which were disposed in two columns to break through the hostile line, one of 12 ships, led by Nelson in the *Victory*, the other of 14 vessels, Collingwood leading in the *Royal Sovereign*.* Just before noon the famous signal, "England expects every man to do his duty," which will thrill the hearts of Englishmen so long as the British Empire lasts, was run up to the mast-head of the *Victory*. A responsive cheer, sure presage of the issue of the battle, broke from the whole fleet, and Villeneuve was heard to murmur, "All is lost!"

A quarter of an hour later the *Royal Sovereign*,* a mile and-a-half ahead of the *Victory*, broke the allied line, and

* One sixty-four, the *Africa*, had separated to the northward during the night, and joined in the battle by passing along the enemy's line, much of the time under fire. She belonged, therefore, to Nelson's column, and co-operated with it during the battle.

engaged the enemy, followed by the remainder of Collingwood's column. Ten minutes afterwards the *Bucentaure*, Villeneuve's flagship, opened fire on the *Victory*, and at one o'clock, having suffered considerably from the concentrated fire of the French vessels, the British flagship passed within twenty feet of the *Bucentaure*'s stern, raked her from end to end with a heavy broadside, and then engaged the *Redoutable* in a close duel. While the two ships

Death of Nelson.

were locked together in deadly combat, Nelson and Hardy, his captain, walked the quarter deck, exposed to the fire of the French sharpshooters who were clustered in the mizzen-top of their ship, only some twenty yards distant, from whence they kept up a deadly fire on to the British vessel. The British admiral was conspicuous by the two orders that blazed upon his breast, and at half past one he was struck by a shot which inflicted a mortal wound, passing through the left shoulder, the lung, and the spine. He was carried below, and expired three hours later, having lived long enough to know that victory was assured.

Victory.

While Nelson lay dying the heads of the British columns, the leading ships of which suffered severely, had broken the French line, opening a way for the vessels which followed them. The allied van, ten ships, summoned by Villeneuve before surrendering the *Bucentaure* soon after two o'clock, arrived too late to effect anything, five standing to leeward and five to windward of the line of battle. Other British ships came up, and engaged the vessels to windward, one of which was captured, and before five o'clock the battle was at an end, and Gravina made for Cadiz with eleven ships which were able to effect their escape.

An eyewitness on the *Belleisle* wrote—"Before sunset all firing had ceased. The view of the fleet at this period was highly interesting, and would have formed a beautiful subject for a painter. Just under the setting rays were five or six dismantled prizes; on one hand lay the *Victory* with part of our fleet and prizes, and on the left hand the *Royal Sovereign* and a similar cluster of ships. To the northward the remnant of the combined fleet was making for Cadiz. The *Achille*, with the tri-coloured ensign still displayed, had burnt to the water's edge about a mile from us, and our tenders and boats were using every effort to save the brave fellows who had so gloriously defended her; but only two hundred and fifty were rescued, and she blew up with a tremendous explosion."

In the night a violent storm arose, and continued for three days. Three more of the enemy's vessels were dashed to pieces on the shore, and all but four of the prizes taken by the British were wrecked. Villeneuve, broken in spirit, was released on parole, and destroyed himself in France six months later. The remains of the great British Admiral were conveyed to England, and buried in Westminster Abbey, while his monument, from the lofty summit of which he watches over the destinies of the Empire he did so much to save, serves to inspire his fellow-countrymen with the patriotism and sense of duty which formed the main motives of his illustrious career.

The execution of the Duc d'Enghien in March 1804 had roused the whole of Europe against Napoleon, but only the Tzar, himself a parricide, had broken off diplomatic relations in consequence. In November the Emperor Alexander of Russia and Frederick William of Prussia had signed a treaty at Potsdam, and, in a manner worthy of the modern successor of the latter, had sworn a dramatic oath of eternal friendship over the tomb of Frederick the Great. Napoleon's position was somewhat precarious. In front of him was Austria, supported by the Russian army and subsidised by British gold; while in his rear Prussia was growing hostile, angered by the breach of neutrality of her territory by French troops, and excited by the young and beautiful Queen Louisa. Napoleon's only remark, on hearing at Schonbrunn of the battle of Trafalgar, was, "I cannot be everywhere"; but the historian Sloane tells us that one noticeable result of the British victory was "the quick dejection it produced in Napoleon's grand army; this was symptomatic of an evil still in its initiatory stages, which, though easily cured for the moment, became in a short time periodic, and finally fatal."

Murat, following fast on the heels of Kutusoff's retreating Russians, had passed through Vienna on the 13th November, securing the passage of the Danube by a ruse. He was himself, however, outwitted in his turn by the Russian general, who retreated into Moravia under cover of a rearguard of 6,000 men under Bagration, which Murat took to be the main Russian army, and, thinking he was not strong enough to attack it, entered into negotiations, and so allowed Kutusoff to make good his retreat, and effect his junction with other Austrian and Russian forces. Murat attacked too late, and was repulsed, and later the Tzar, who had been in a perilous

situation, received large reinforcements, including his Imperial Guard. The allies had thus some 90,000 men assembled in Moravia, and this large force gave such confidence to Alexander that he urged battle, contrary to the advice of less fiery counsellors, who advised him to await the armies of the Archduke Ferdinand, who was in Bohemia, and the Archduke Charles, who was on his way to Vienna with the army of Italy. These two forces amounted to 80,000 men.

To contend with this hostile array Napoleon had large forces, but they were scattered in accordance with the great principle he had himself enunciated, "Separate to live; gather to fight." They were, however, so disposed that they could be rapidly assembled for battle, and they were now hurried to the point of concentration near Brunn. Sloane well sums up the situation:—

"At first sight it appears as if Napoleon were outnumbered, his detachments scattered, and his communications endangered; and these charges have been brought in order to attribute his subsequent success to good fortune alone. But a scrutiny of the Emperor's grand strategy will show that he could be perfectly secure. From far and near his well-trained but scattered divisions were moving on. Massena had left Italy; Ney, having swept the enemy from the Tyrol, was coming up; and all about the southern line divisions were moving to guard strategic points, to stop the hurrying Austrians, and yet be within 'marching distance.' With this comfortable assurance, the great captain advanced to the Moravian capital, and there established his head-quarters on the nineteenth. Once again, by his amazing power of combination, he had gained the advantage, his troops being so disposed that in one day he could call in fifty-four thousand men; in two, seventy-five thousand; in four eighty-five thousand; and his line of retreat was secure. If compelled to withdraw, he could fall back on Davout, Mortier, and Klein, assemble one hundred thousand men, and again make a stand. If Kutusoff and Charles should march straight to Vienna to effect a junction, he could oppose to their combined army of a hundred and sixty-nine thousand troops, a hundred and seventy-two thousand of his own. The defensive position of his foes was virtually impregnable, but they could not unite for attack as swiftly or advantageously as he. His own defensive position was less strong, because he had for some distance about and behind him a hostile country. What the allies, therefore, needed was time; what Napoleon wanted was a battle."

The village of Austerlitz stands near the high road from Brunn to Olmutz, twelve miles south-east of the former place, on the bank of the Littawa river, which flows westward into Lake Satschan. Four miles west of Austerlitz, Pratzen stands upon a height, and high ground characterises the intervening country, whilst another mile to the west the Pratzen plateau falls to the Goldbach stream, which flows through marshy ground almost due south by the hamlets of Bellowitz, Schlapanitz, Sokolnitz, and Telnitz. The Emperor had already examined the ground in the vicinity, and on the night of the 30th November he bivouacked on the highest point between Brunn and Austerlitz, north-west of Schlapanitz, still known as "Napoleon's Mount." He had taken up a line with his left beyond Schlapanitz, strengthened by the height known to his men as "the Santon," crowned by a spire and fortified by a redoubt and eighteen pieces of cannon.

His right, about Sokolnitz and Telnitz, was weakly held, to invite the hostile attack, by Legrand afterwards reinforced by Vandamme and Davout. In the centre was Bernadotte, and between him and Lannes, who held the left, was the cavalry under Murat. Soult was further west, and Oudinot covered the Emperor's bivouac with ten battalions; to the west of which were ten battalions of the guard with forty field pieces, forming a strong reserve.

On the 27th November Napoleon became aware that the allies were advancing to attack him. He might well have occupied the Pratzenberg, with his right on the Littawa stream, but he determined to leave this to the enemy, intending to gain one of those Napoleonic victories which settled campaigns at a blow. The enemy, he knew, would weaken his centre to attack the French right and so expose his flank to attack. He either divined this intention on their part, or had it from a traitor in the Russian camp.

With the allies were the two Emperors, Alexander and Francis who, with their 72,000 men, hoped to crush the invaders, whose forces they had miscalculated to be only 50,000.

On the night of December 1st, Napoleon passed from watchfire to watchfire received with enthusiastic shouts by his soldiers, who illuminated the camp with torches of burning straw, and who, knowing the great Captain's plan for the morrow, felt confident of victory.

The morning of December 2nd, 1805, the first anniversary of Napoleon's coronation, dawned cold and misty. A heavy fog had gathered over the country, but this soon dispersed before the light of the coming day, except where it veiled the ravines and watercourses, and particularly the valley just below Pratzen where Soult's troops, massed in two lines of battalions in column of attack, lay in front of Pontowitz ready to seize the plateau above on the given signal. At dawn the allied left pressed fiercely upon the French flank about Telnitz and Sokolnitz, where the fight raged for many hours with varying fortune. At the same time the Santon hill was attacked, but there the enemy made little headway, although strengthened by reinforcements from their already weak centre.

In the centre two columns, advancing to occupy the Pratzen plateau, left a dangerous gap which the French were quick to take advantage of. Pressing rapidly up the height, Soult attacked with overwhelming force, and drove the Russian centre under Kutusoff down the eastern slope of the plateau. On the north the Russian cavalry gained a momentary advantage, but was soon overthrown by a charge of the cuirassiers of Napoleon's guard. The battle was now decided. The allied army was split in two, their centre and right driven far back to Austerlitz, and their left, on which the French now closed in on every side, cut off from the line of retreat, and compassed in on every side, save for a narrow space between the lakes of the Goldbach. Soult swung round on his right, and attacked the Russians about Telnitz and Sokolnitz in flank and rear, while Vandamme and Davout hemmed them in on the north and west. Buxhowden with the head of the allied column, abandoning his guns, reached Austerlitz, escaping between the ponds before the victors closed in on every side. A scene of horror ensued. Thousands attempted to escape across the frozen Satschan lake, but the ice was ploughed up by the fire of the French guns, and the hapless fugitives had their lives quenched in the deep water. Baggage and supply trains, batteries of artillery, and divisions of infantry were captured. Never was a rout more complete. The allies put their loss at 25,000 men and 160 guns. The French had some ten thousand killed and wounded. Next morning the Emperor ordered a relentless pursuit, writing to Soult.—"The Emperor will personally follow close on the enemy's heels. It is his opinion, that in warfare nothing is done as long as anything remains to be done; no victory is complete

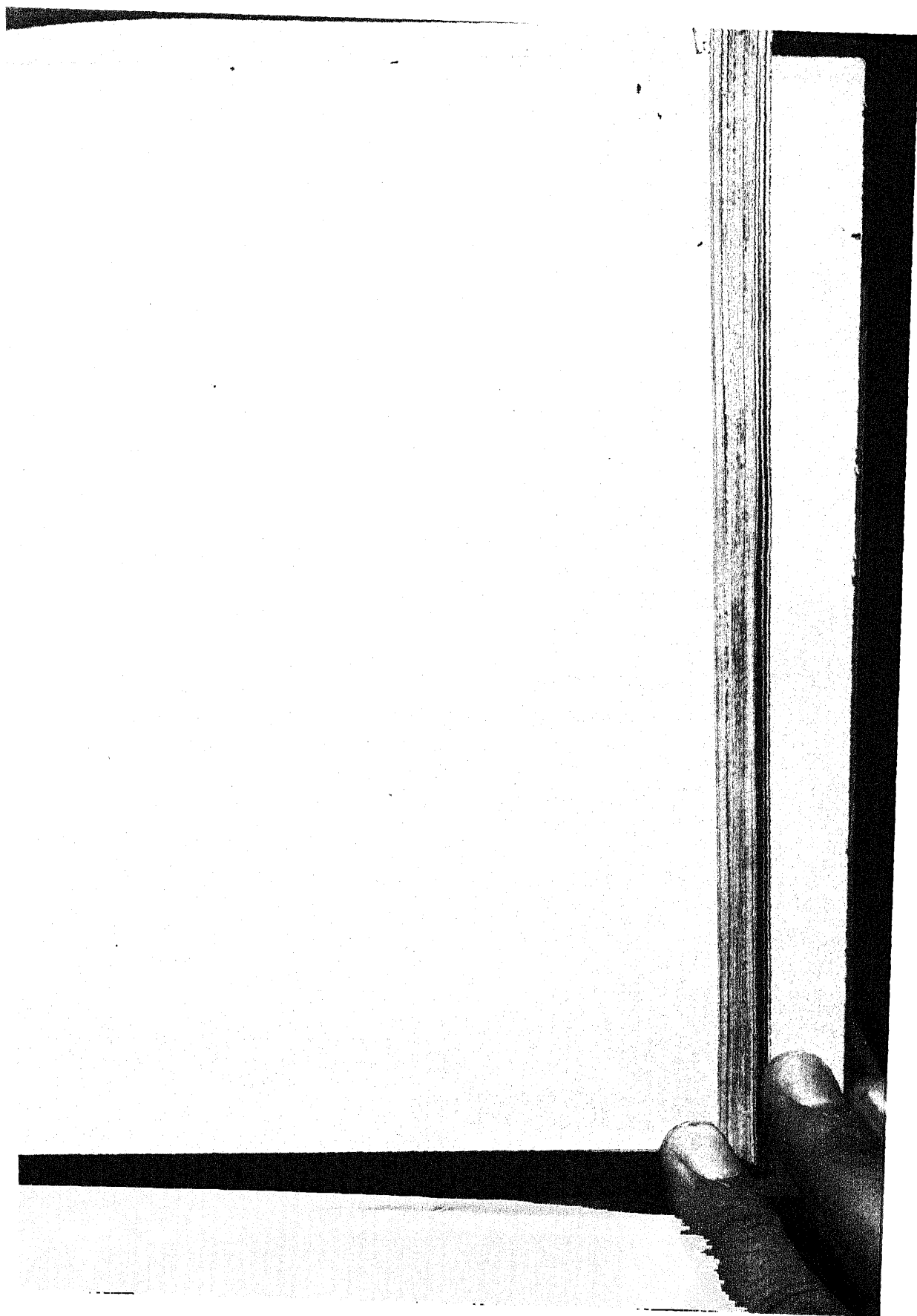
as long as an enemy remains in the field.....In the position in which we are, there is only one order to be issued, *viz.*, to inflict as great losses as possible upon the enemy, and to improve our victory in every way." On the 4th December the Austrian Emperor was received by Napoleon, who imposed his own terms for the conclusion of peace.

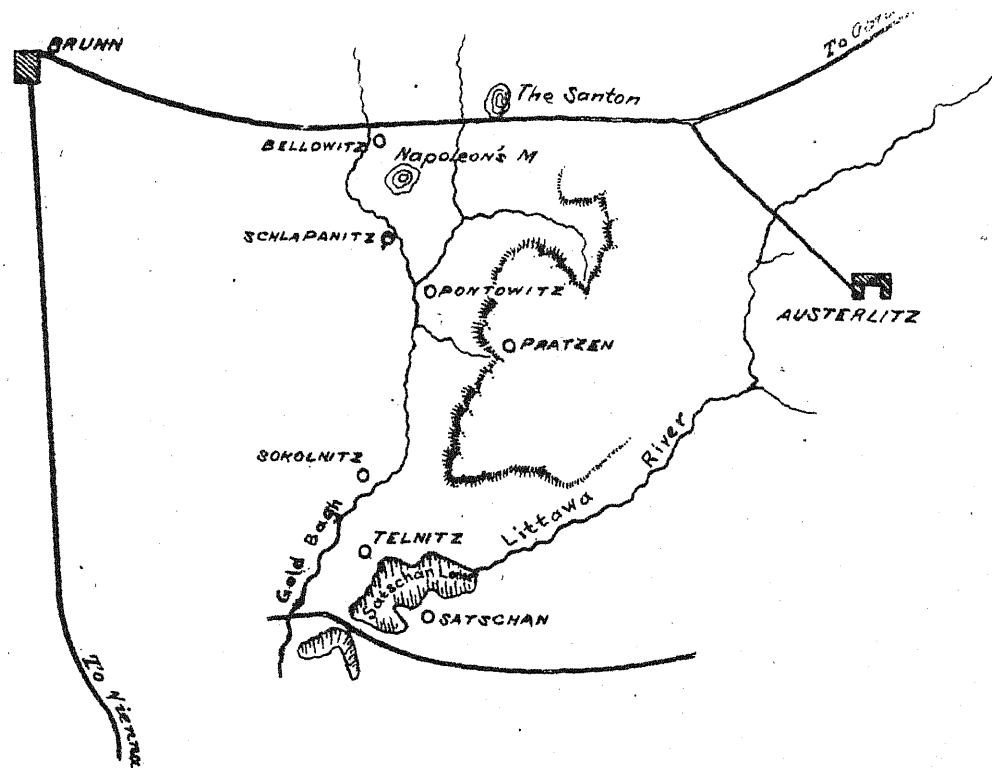
No attempt has been made here to relate the battle of Austerlitz in detail;* the main features only have been indicated. This was the

Reflections. first great Napoleonic battle, which differed from hitherto accepted ideas in the principle that the action may be lost or neglected in one part of the field, while victory is gained in another. It is not uninteresting to compare, generally, some of the main points in which the battles of a hundred years ago differed from those of modern times. This difference is traceable to the fact that, owing to the great armies employed now-a-days, and to the great range of modern weapons of offence, battles are fought over large areas, and consequently occupy longer periods of time. In principle they do not differ, but in the application of principles there is a wide divergence. The direction of armies in battle, owing to the vast arena, as they were directed by Napoleon, becomes impossible in our day. Napoleon, posted on the height above Austerlitz, whence with the eye of genius he could survey the whole limited area of operations and could observe the panorama-like unfolding of events, was himself able to control the progress of the fight, and direct with unerring judgment the measures that brought about the issue of the contest. The battle lay in the hollow of his hand, and his genius sufficed to secure the victory. But modern conditions of war, where the battle may extend over many miles of front, demands decentralisation, and far more independence of action, and more ability, on the part of subordinates.

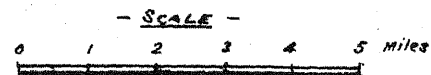
It has often been observed that Napoleon conquered his enemy with inferior forces. This is not entirely correct. Victory, as he himself said, was invariably on the side of the big battalions. Certainly he beat his enemies *strategically* with inferior forces, but he was always careful to concentrate on the point of tactical contact a force superior to that of his opponent. Separating to live; gathering to fight; the rapid concentration on the decisive point; the lightning blow, and

* For details of the battle, the reader is referred to *Napoleon as a General*, by Count Yorck von Wartenburg; and *Napoleon*, by Colonel Dodge, United States Army.



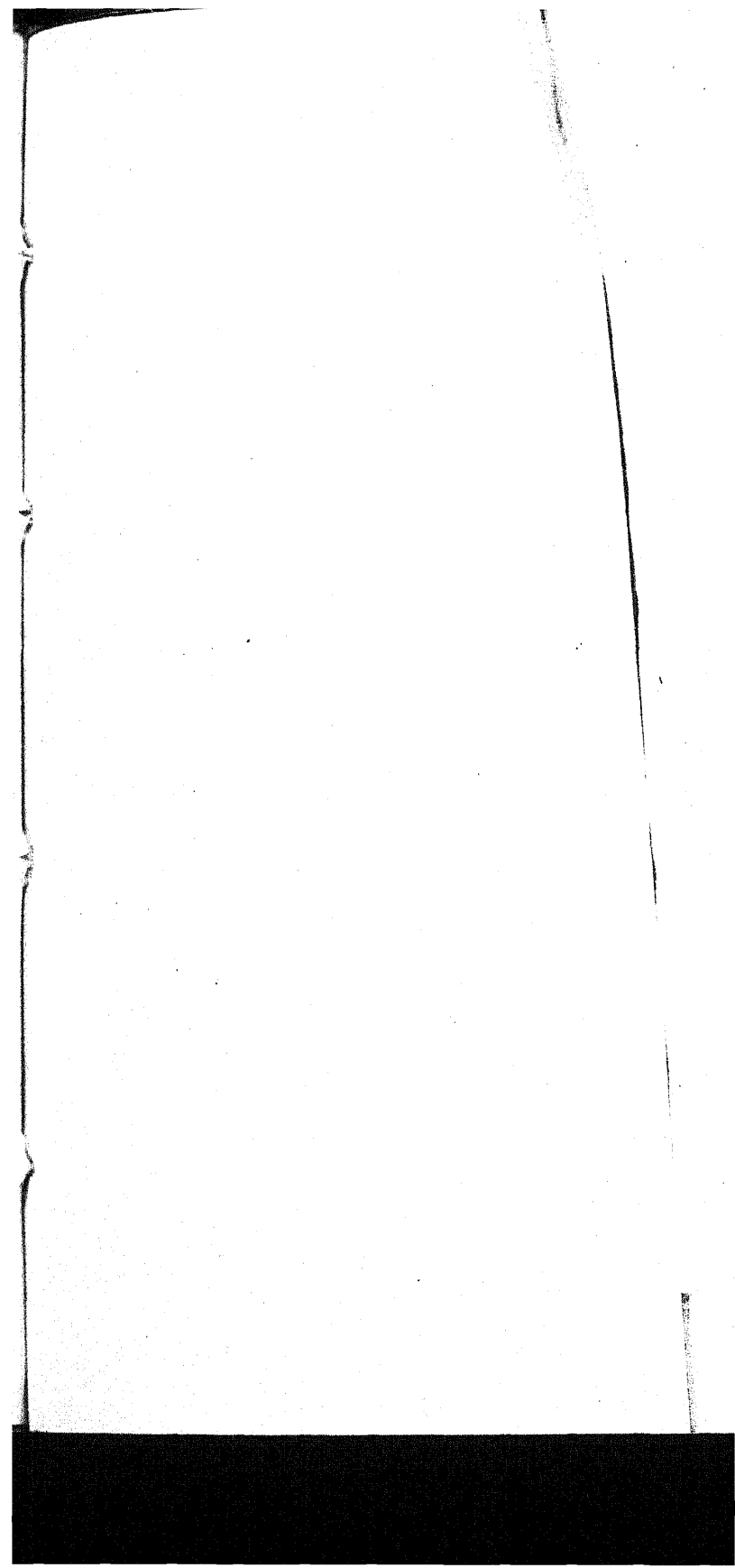


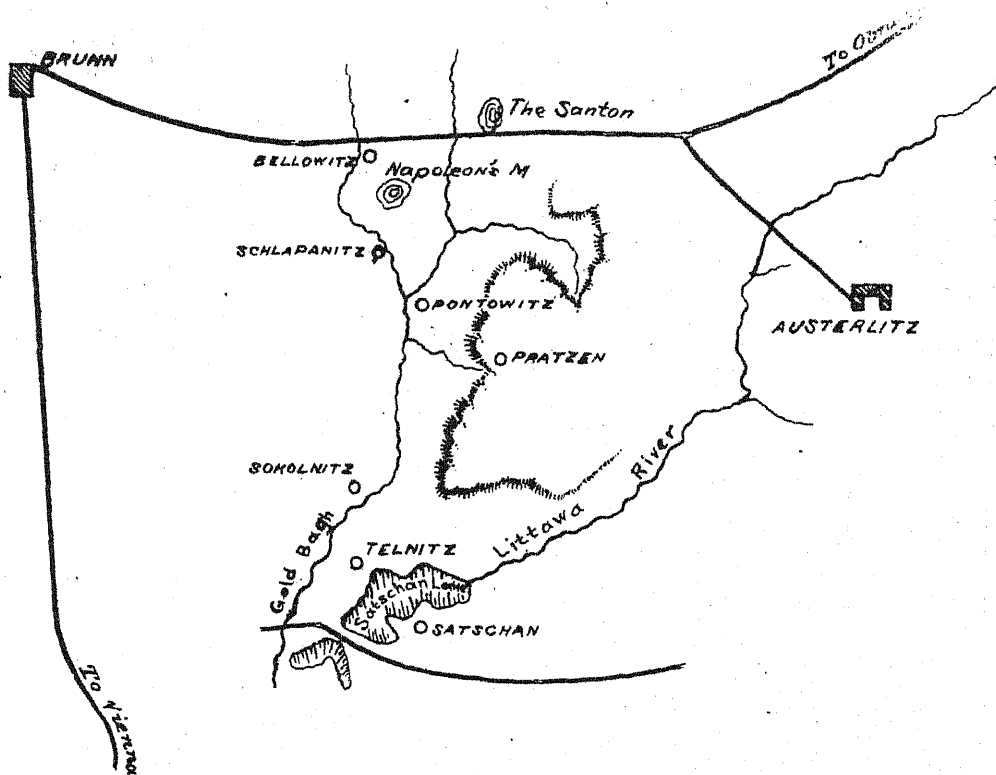
THE FIELD OF AUSTERLITZ



ntless pursuit, following on dispositions made not merely defeat but to destroy the enemy—these were the characteristics of Napoleon's generalship. With him victory was not only a set-back to the enemy; it meant the fate of Empires and the fall of dynasties.

Recent events appear to show that effective pursuit under modern conditions is a more difficult operation than it was a century ago. Perhaps this is partly due to the facilities afforded by a line of rail for the removal of the baggage and wounded from the scene of action. But the carrying capacity of a single line of rail is very limited. There can be little doubt that the difficulty, experienced in our time, of carrying out an effectual pursuit is largely due to the containing capacity of modern arms. A few rifles or guns, strongly posted, will hold in check a very large body of men, and a few bodies of men, thus posted in suitable positions, should be able to prevent the retreat of a defeated army to be carried out comparatively unmolested, and eliminate from such a retreat the horrors and the disasters which Napoleon was enabled to inflict a hundred years ago. Another factor which has entered into the art of war in our time is the strategy of the battlefield. It can no longer be said that strategy ends where tactics begin. The field of tactical action extends over many miles of ground as to afford considerable latitude for the exercise of strategical skill. And in some respects this calls for concentration in the hands of the Commander-in-Chief. While in one part of the field of battle a portion of the army may be gaining a tactical victory, elsewhere the fortunes of war at some decisive point may be turning all their efforts to naught, and rendering futile such success as they may have gained. This we see, on a small scale, at Austerlitz. The supreme Commander is alone in a position to judge of the course of the battle as a whole, for he holds in his hands the threads that lead to remote and far separated parts of the field. So vast is the area of the modern battlefield, that all the great natural obstacles, such as mountains, rivers, lakes, and forests may enter into its composition, and influence, strategically as well as tactically, the issue of the contest. This, again, is seen in miniature at Austerlitz. But in our day Napoleon cannot control a battle by his mere *coup d'œil*. His subordinates must be strategists and tacticians, able to work out his idea. Napoleon's system of concentration produced, as he himself said, "generals who were able to wage war on the roads and within the range of the cannon's mouth"; but





THE FIELD OF AUSTERLITZ

- SCALE -

0 1 2 3 4 5 Miles

they failed, as Grouchy and Ney failed in the Hundred Days, when independent strategic action was demanded of them. At the commencement of this monograph a comparison between the effects of Trafalgar and of Austerlitz respectively has already been indicated. It may be said that the former had as much influence upon the decline of Napoleon's power as the latter had upon the meteoric rise in his career which culminated a few months later at the battle of Jena, when the might of Prussia was broken at one blow. But while Austerlitz exercised only a temporary influence on the fortunes of Napoleon and the fate of Europe, the effects of Trafalgar are felt even to this day.

Napoleon took the news of the destruction of his fleet with calm philosophy ; but no doubt he realised its full significance, as he had always realised the value of sea-power, which he had hitherto considered "the principal and constant aim of my policy." Now he saw that the mastery of the sea had slipped from his grasp for ever. Sea-power enabled us to carry on the Peninsular War, and thus keep alive that "Spanish ulcer" which, eating into the vitals of his military strength, contributed so much to the downfall of Napoleon; whilst the wealth brought across the ocean enabled us to maintain the long-sustained struggle that terminated on the field of Waterloo. Trafalgar made us masters of the sea, and enabled us to obtain and retain those colonies which today add so much to the greatness and prosperity of the Empire, and are regarded with so much envy by lesser and less fortunate nations.

Since the day of Trafalgar the fleets of Britain, unchallenged and unquestioned, have held the sceptre of the seas, and the trade they carry and protect has built up the wealth and secured the territory of that Empire on which the sun never sets. The effects of Trafalgar will last as long as the British nation endures. The sun of Austerlitz was soon to sink on the bloodstained battle-fields of the Iberian peninsula, to rise again for a brief space, shorn of much glory, on the snows of Russia, and finally to set for ever on the culminating ruin of Waterloo.

WINNING ESSAY—MADRAS COMMAND, 1904. 355

BY MAJOR T. FOWLE, BRIGADE MAJOR.

Motto—Si qua meis fuerint, ut erunt, vitiosa libellis, excusata suo tempore, lector habet.
—Ovid.

SUBJECT.

How can the conditions of peace training in all its phases be best approximated to those of active services?

The arrangement of the subject.

Paragraph.

- 1 Introduction.
- 2 The Manœuvre Battle.
- 3 Combined Training Attack and Defence.
- 19 Orders and instructions.
- 20 Information and reconnaissance.
- 23 Marches.
- 27 Protection.
- 36 Summary of remarks on Training.
- 37 Conclusion.

Suggestions for Peace Training.

Details for emphasis at Training.

Introduction.

My direct answer to the question asked above can be given in less than 4,500 words.

It is—

"By all ranks at all times loyally, zealously and intelligently carrying out the instructions and acting on the principles laid down in our training books and in combined training".

At present this is not always done as the following pages will show.

The expression "in all its phases" is somewhat comprehensive, and appears to include the training of all arms from enlistment to the battlefield, an amount of matter which I cannot discuss exhaustively in 4,500 words.

I have therefore to save space, omitted almost all reference to the training of troops individually and by arms, as laid down in the training books of each branch, and I have confined myself in the main to a study of Combined Training.* The principle referred to is given in original for easy reference, and as a rule an example from history is quoted in support of the contention raised. The examples are carefully selected as it is dangerous to deduce principles from isolated cases of success in war. I am averse to too much of the "active service condition" being introduced into the early individual training of our soldiers. I consider that first, whilst inculcating a high standard of self-respecting discipline, we should teach individuals, officers and men, how to get the best results out of their weapons, and how to prevent the enemy from getting the best results out of his: at the same time all should be taught how to keep their bodies and minds in good trim, the study of ground and the management of animals, both in quarters and in the field, being also well ingrained in all. After these preliminary lessons are digested "active service conditions" should be gradually introduced, so that having first gained full confidence in their weapons and in themselves, the men and young officers will be able to derive the full benefit from instruction collectively and in combination with other arms.

2. THE MANŒUVRE BATTLE.

The moral effect of the fear of death being absent in all our manœuvre fights, it is essential for us all on those occasions, if we would learn and teach true lessons, to stick to the teaching of our drill books and of history, which alone, added to that experience of war which exists in most units, can be relied upon to make our peace training as realistic as possible.

"Should I act in this way if bullets and shells were about"? is a question which we should frequently ask ourselves during peace manœuvring, and if our conscience answers "No," then our teaching is false and needs to be corrected.

When all are taught what to expect in war they will not be surprised when the battle comes, and so will be well prepared to meet it. No amount of good system in peace training however can be of any avail, unless we all do our utmost "to play the game." Training should be constant (with a

* All quotations are made from Combined Training, 1905.

due amount of leisure, see Army Order No. 211 of 1902) and progressive, and the system should be continuous, but as

Subject to the requirements of training, which must be paramount, the soldier's time will be so apportioned that he has at his disposal on each day a certain definite period of leisure. This period will not be broken into for fatigue and working parties, except in circumstances of exceptional urgency.

taken to avoid worrying good men with minor details when they are sufficiently well drilled in them already.

Experience however shows, that after long spells of active service or of manœuvres, slovenliness and slackness tend to appear in many cases, if matters of detail are not at once furbished up.

3. COMBINED TRAINING.

Attack and Defence.

2. CT Section 1, paragraph 2.—In India the distribu-

tion of the troops, the exigencies of climate, and the arrangements for cavalry and artillery practice camps by arms, place difficulties in the way of teaching commanders, staff, men, and officers to work with parties of the other arms as often as they need.

It is essential, then, except perhaps in mountainous or forest country, that every force which takes the field against an organised enemy should be composed of the three arms; that every column of infantry should be accompanied by a proportion of mounted men and, generally, of guns, that artillery should be attached to all large bodies of cavalry.

The French Right or 6th Corps at Gravelotte fought without Engineers or tools; result, defeat (see Moltke's Franco-German War, pages 49-50). At St. Privat the German Guard attacked without artillery. Result abnormal loss. (Moltke, Franco-German War, pages 53 and 59).

At Weissenburg the Germans operated without cavalry—Result all touch lost (Moltke, Franco-German War, page 13). Clive marched to Kaveripak without (cavalry) protection—Result surprise. (Malleon, Decisive Battles of India, page 26). At Hagenau 2 cavalry regiments advanced to reconnoitre unsupported by Infantry or Guns—Result "Held up" by French. (Clery, page 134). The German cavalry at Argonnes forest fared similarly (Moltke, page 70). Yet sometimes at Manœuvres, and often in Station Field days, one arm or at best two only, are represented (especially in the hills). But in South Africa many young officers commanded small mixed columns.

2. *CT Section 3, paragraph 3.*—Plevna and Modder River teach

A knowledge of the effects of fire is essential both to effective leading and sound instruction. The flat trajectory of the rifle, smokeless powder, and the quickfiring field-gun have brought about considerable modification in the application of tactics. The ground for 1,000 yards in front of a line of infantry, provided that they are steady enough to take careful aim, and the ground is favourable, is so closely swept by a sheet of lead as to be well-nigh impassable to troops in any other formation than lines of skirmishers, extended at wide intervals. The long deadly zone of this horizontal fire is the most powerful factor in battle.

the result of horizontal fire on the assault, ants at any rate. Yet umpires permit, and some

officers practise formations at peace training, within the zone of horizontal fire, which in war would be impossible.

3. *CT Section 4, paragraph 2.*—The fate of Long's

Except in a close country, where the view is limited, it should generally be easier for the defender to hide his dispositions, and so effect a surprise, than for the assailant. Thus the difficulty of reconnaissance favours the defender rather than the assailant.

Guns at Colenso shows that defenders can surprise the assailants, whose difficulties in reconnaissance are great (even when time for it exists). But our conventional schemes and special ideas some-

times give more information at manœuvres than one ever obtains in war. Again, scouts and patrols at training, unchecked alike by senior officers and umpires, gather information in impossible ways, were bullets about, and in a proximity to the enemy, impossible on service. Manœuvre tactics or tricks need to be suppressed. The object is to train the troops, not to say "WE WON". Cavalry will have to fight for their information in future wars probably, but the charges and countercharges by patrol against patrol, seen at manœuvres, are incorrect, nor do men of mounted patrols, dismount and creep forward to a vantage point as frequently as they should.

4. *CT Section 4, paragraph 3.*—At Woerth the French

On the other hand, in order to win a decisive victory, to carry out the pursuit, and to annihilate his enemy, the defender, at some time or other, must leave his position and attack. But the time, if not the place, of the counter-attack, must depend on the adversary's movement; and a few minutes too soon or too late may make all the difference between success and failure. Nor will there be much leisure for the long preliminaries.

delivered 13 counterstrokes, 11 of which drove back the German firing line. (Official account). Stoessel at Kinchau (heights of Suchiatun) and Sassulitch at the Yalu failed, largely through lack of counter-stroke. (Gilbert, page 236, U. S. I. Journal, India, July 1904). Our assaults at manœuvres are seldom called upon to meet counter-attacks.

Because the Boers at Magersfontein Spion-kop and Colenso, lacked the discipline and initiative to follow up their success with counterstroke, we must not assume that our future enemies will be as kind. In peace training, then, counter-

strokes should be frequently not only planned but vigorously delivered, so as to give the men and officers of the assailants a real lesson, by having suddenly to take steps to defend themselves and their comrades, against the partial surprise and the moral as well as the physical blow of a "strong timely energetic counter-attack."

5. *C T Section 8, paragraph 2.*—Training fights often consist of the attack and defence of a position X—Y. The attack fails or succeeds, the bugle sounds, and all is over. But in war often a series of attacks are made, nor are all successful. Oku's infantry at Liau-Yang made 8 unsuccessful assaults in 5 consecutive days (Weekly Times Correspondent, September 16th, 1904, page 596). At Woerth the German XIth Corps carried 5 successive tactical objectives, Albrechtshausen, the south edge of the Niederwald, the Coppice, Elsassnausen, and Froeschwiller. (Official Account). (See also *Combined Training, Section 11, paragraph 2*).

The difficulty of reconnaissance, the strength of the defence against direct attack, the difficulty, owing to the wide front occupied by a defending force, of developing flank attacks, will make the fight for each locality long and exhausting; and it will, as a rule, be necessary for the troops to secure one point of vantage before they attack the next. The attack, too, of each locality will require a large number of men and guns; and the whole force, before it attacks the main position, may be employed in mastering some important point which lies outside it. Thus the battle, more often than not, will resolve itself into a series of distinct engagements, each raging round a different locality, and each protracted over many hours.

Combined Training, Section 11, paragraph 2.

Hence I advocate leaving it sometimes to the leaders

As a rule, the first objective will be the locality, or localities, which facilitate the concentration of superior force and the development of an effective fire against the most vulnerable part of the position. When these localities have been seized, strengthened against counter-attack, and the ground beyond carefully reconnoitred, the position itself will be attacked; and the objective will be that point which the commander intends to assault and occupy.

at training to carry on as the situation dictates not contenting themselves with one success only. It should also be left to them when to stop fighting (or to try to do so) and to make arrangements for the ensuing march or halt as happens in war when the enemy, not the Umpire, is the important factor.

6. *C T Section 8, paragraph 6.*—The Japanese at Liau-

The advance of an attacking force should always be covered by the fire of other troops, infantry as well as artillery. Not only must the commander make arrangements for this covering fire in his initial dispositions, and also during the progress of the engagement, but leaders of all ranks, down to squads and groups, must endeavour to apply, at all stages of the fight, this all-important principle of mutual support.

Yang advanced without firing, "covered by the fire" from their supports (Weekly Times Correspondent, September 16th, 1904, page, 595). Had the Turks been kept down behind their parapets at Janig Bair C Redoubt, the Russians would have won it. (See Defence of Plevna, 2nd Battle, Herbert,

pages 183, 189.) On 22nd January 1902, Transvaal, the first effort on Meyer's Farm, Goedworwaching, failed. "Covering fire" was then arranged from three sides, and the place fell. (Eye Witness' account, page 306). The enveloping tactics in South Africa, generally, also prove the efficacy of covering fire, and the practical impossibility of getting on without it; but so much is it ignored in peace training that the recent circular about marks for Tactical Training *did not even mention it*.

7. *CT Section 10, paragraph 2.*—Magersfontein and Colenso show the results of inefficient reconnaissance. Oku before Kinchau reconnoitred with officers only, for five days,—and "won" (Gilbert, page, 234, U. S. I. Journal, India, July 1904.) Does manœuvre

Time spent in reconnaissance is seldom wasted; and unless the situation imperatively demands instant action, a commander should never commit his troops to action until he has made a personal survey of the ground before him.

reconnaissance always take five hours? or even say, fifty minutes?

8. *CT Section 10, paragraph 6.*—The cutting off of the.....Shire Regi-

Arrangements should always be made for continuous observation of the enemy's movements during the action. In addition to patrols working round his flanks and rear, staff officers, acquainted with the commander's intentions, should be posted at commanding points on the field of battle, to communicate by signal or messenger with headquarters.

ment picquet near Rensburg shows result of not knowing enemy's movements; you hold out too long and get cut off.

Arrangements for continuous observation of the enemy during action are seldom seen, say in a tactical fitness examination.

9. *CT Section 10, paragraph 7.*—Spionkop shows the result of

It is of great importance, throughout an action, that all arms, and all bodies of troops, should interchange information (S. 50, paragraphs 2 and 4.)

Ample intelligence is so important that methodical and complete arrangements should be made to obtain it. Nothing should be left to chance. All available means should be employed. In every command some simple method of collecting and transmitting information should be established, and constantly practised in peace.

It should be the constant aim of every officer, non-commissioned officer, and man, during a campaign, especially in action and when the enemy is near, to furnish to his immediate superior, to his subordinates, and to neighbouring bodies of troops, such information as may be of value to them. This he should do even though he may think the person concerned already has the information, as safe conclusions can often be drawn only by collating reports from different persons and places.

the staff's omission to arrange for interchange of information during a fight. Umpires should

weigh this factor at manœuvres.

10. *C T Section 24, paragraph 3.*—The British success

In defensive operations, the concealment of all troops, guns and entrenchments is generally a matter of the greatest importance. If this principle is carefully observed, the enemy may be betrayed into a rash and premature attack, or he may even be exposed to the demoralization of a complete surprise. No situation is so critical for an attacking force as when it moves against a position believed to be unoccupied, and finds itself suddenly assailed at short range by heavy fire. It may be unable either to advance or to retire.

at Waterloo shows the success of concealing dispositions on the defensive. Blucher's defeat at Ligny demonstrates the result of neglecting concealment. The fights on the Tugela also prove the advantage of concealment to the defence, and the disadvantage of exposure, tactically and strategically, to the attack. Surprise is now a powerful weapon of the defender. Yet at training, not only do we allow hawkers, led horses, dhoolies, and range-finders, to "give away" positions in many cases, but Umpires are sometimes so thoughtless that it has been necessary at home, to regulate their collecting or pointing and observing where harm can be done.

Troops too, must be made to study background in peace, so that both in works and in the open they can give their opponents the concealed objective which they will have in war.

11. *C T Section 24, paragraph 4.*—False fronts and

The enemy may be misled, and his reconnoitring parties embarrassed, by means of detached parties, preferably of mounted troops, sent out to occupy temporary positions, either in front or beyond the flanks of the entrenchments. If these detachments are well handled it may be very difficult for the hostile patrols to ascertain the exact locality or the extent of the battle position; and their commander may be induced to fatigue his troops by an attack on ground held merely as a screen, or to extend his line unduly in an attempt to envelop a false flank. On suitable ground, artillery may often be advantageously employed for this purpose.

false flanks are useful in war. The Boer bogus trenches, and the Japanese naval shelling of sham Russian positions on the Liatung Peninsula, are cases in point. Drill books do not say what you are "not to do," yet, at

Peace manœuvres, leaders seldom try new or original methods, apparently from fear of the directors. Thus troops lose much of the "unexpected" in their training, which to make it true to war, should be there, for the only normal thing in war is, that all is abnormal.

12. *C T Section 24, paragraph 5.*—Dargai shows that

If time admits, the ranges from 500 yards upwards should be marked, and the troops made thoroughly acquainted with the distances.

the tribesmen measure ranges and mark them. Manœuvre Umpires

seldom debit defenders for the lack of this precaution.

13. *C T Section 25, paragraph 1.*—Magersfontein

Trenches or guns on the skyline afford so excellent a target, that such a position, especially if the enemy has good artillery, should always be avoided.

demonstrates the value of positions for guns and entrenchments, selected so as to deceive the hostile reconnoiterer and fire, alike, where too background and features were both made full use of by the defender. In our peace training this study does not receive the attention amongst the non-commissioned ranks and officers which the necessities of war conditions demand.

14. *C T Section 26, paragraph 1, and Section 26, paragraph 12.*—Lack

The cavalry and other mounted troops, even if few in number, should be actively engaged. A most important part of their duty during the action is to keep a good look out beyond the flanks, to prevent the enemy's patrols and staff officers from discovering the position of the reserves, and to give early notice of turning and out-flanking movements. As a rule, the cavalry will be massed in a position in which cover from fire is assured, and from which it can operate with advantage against the flank of the enemy's advance, and in defence of the weak flank of the position.

A proportion of mounted troops should always be allotted to the general reserve, for it is only, as a rule, by this means that the officer commanding this body can keep himself acquainted with the progress of the fight and protect his flanks when he assumes the offensive.

of mounted men in the command, frequently, prevents in peace the use of mounted look outs beyond the flanks, and the allotment of mounted men to the reserve advocated in our Combined Training,

hence their use in war is not so well grasped as is necessary.

15. *C T Section 32, paragraph 2.*—Long's guns would not

It is important, therefore, that the course of the action should be closely watched, that the staff should make arrangements for incessant patrolling, constant observation, and the rapid transmission of reports, and that the general reserve should be prepared for immediate action throughout the fight.

have been lost at Colenso probably, and the section of the Northamptonshire in the Tirah campaign would not have been forgotten and cut off, had staff arrangements been made to watch and report the progress of the fights. It is difficult to suppose that Kuropatkin would have escaped comparatively safely from Liao-Yang, had he not ensured good arrangements, for constant patrolling, incessant observation, and rapid transmission of reports. These points should be insisted upon in our peace condition tactical exercises, if the art of war is to be properly taught.

16. *CT Section 32, paragraph 1, and CT Section 33, paragraphs 1 and 4.*—

The decisive counter-attack will generally be delivered against the enemy's flanks, and in such a direction as to threaten his line of retreat, although opportunities for breaking the centre may sometimes occur. The counter-attack should come, if possible, in the form of a surprise. It should be carried through with the utmost vigour and resolution, and all ranks should understand that they must press forward until the last reserve has been thrown in. There will be little time for preparation, but the advance should be covered by all the artillery available, firing as rapidly as possible on the enemy's infantry, and keeping a sharp look out for his reserves. It will generally be advantageous moreover, from the point of view of moral, if some portion of the artillery accompanies the infantry, and comes into action at decisive range.

Local counter-attacks, which are the special duty of the local reserves, may be made at any moment. Should the enemy gain a local success either in the position itself, or on ground close to it whence he could seriously threaten the defence of the position, the necessity for counter-attack become imperative. In such cases, the sooner the counter-attack is delivered the better, so that the enemy may have no opportunity of strengthening the ground he has gained.

Local counter-attacks should also be delivered when the enemy advances to the assault. Bayonets will be fixed when his line arrives within a few hundred yards of the position, every available man brought up into the firing-line, and the charge met with magazine fire, and, if that fails to stop him, with a countercharge. In this countercharge, which should be practised at all manœuvres, the men will cheer, bugles will be sounded, and the pipes will be played.

of counterstroke when applicable to the situation. When positions are reconnoitred, points and routes favourable to counterstroke should always be reported upon.

17. *CT Section 39, paragraph 2, sub-para. 4.*—Magersfontein showed that in war artificial obstacles are encountered during night operations. Atbara shows the same, but with daylight. British troops in peace seldom, if ever, practise "clearing a passage through obstacles under fire by day or night" but both are true to war.

If obstacles are encountered, the troops will lie down till a passage has been cleared.

fontein showed that in war artificial obstacles are encountered during night operations. Atbara shows

the same, but with daylight. British troops in peace seldom, if ever, practise "clearing a passage through obstacles under fire by day or night" but both are true to war.

Wellington's general counterstroke at Waterloo, and the Devonshire local counterstroke at Waggon Hill show what in peace we should teach our men and officers to practise "at all manœuvres", but in my service I have only seen one general and two local counterattacks delivered at training. This is not true to war requirements. Directors should comment severely on neglect

18. *C T Section 20 paragraph 1.*—Kincaid's Engineers at

It is of the greatest importance that all ground gained should be secured, and if necessary, the communications improved. It is impracticable, however, to construct entrenchments under heavy fire; entrenching, therefore, as a general rule must be confined, in open country, to the hours of darkness except when the main position has been captured, and a strong counter-attack may be expected. In close country, however, where the fighting takes place among woods and hedgerows, and in country where loose rocks are available, existing means of protection from fire may be improved, even in daylight, without excessive risk. Buildings wrested from the enemy, or lying within the zone of longrange fire, should, when suitable and well situated for the purpose, be hastily fortified to serve as rallying points. Entrenching tools, therefore, and, if possible, parties of engineers should always be within reach of troops attacking.

Paardeburg proved the good of making entrenchments at night in an attack.

The first Majuba shows the result of the omission of this work. We seldom practise this night entrenching in peace yet its importance is great, and the difficulty of judging where to make and how to trace your works so that

they may be of use at daylight is greater.

ORDERS, (and instructions).

19. *C T Section 43 paragraph 2.*—Inkerman Gravelotte

It will often happen that local circumstances, impossible to foresee, may render the precise execution of the orders given to subordinate leaders not only unsuitable but impracticable. Moreover, when it is impossible, as must often be the case to issue more than very general instructions, the attainment of the object aimed at must be left to the initiative and intelligence of these leaders.

Decentralisation of command, and a full recognition of the responsibilities of subordinates in action are thus absolutely necessary.

influence the fight by the "skilful handling of your Reserves" as Von Werder did on the Lisaine, and as Bazaine at Gravelotte and Sassulitch at the Yalu did not.....See also C T Section 12, paragraph 4.....Dry nursing non-commissioned

A commander can only exercise a direct influence on his command so long as he retains at his disposal a portion of his force with which to meet the varying contingencies of an engagement. If he keeps in his own hands a strong reserve, he will have it in his power to take instant advantage of any mistake the enemy may commit, to restore the battle should the leading troops meet with a serious check, to meet a counter-attack in force, or, in case of need, to provide the additional strength required to drive the attack home.

and Spionkop teach the next to impossibility of giving orders to troops when once launched to the attack. In peace condition fights we still give our subordinates too many and too frequent orders, with the result that they miss them on active service, and so they become "lost" and lose "initiative." All you can do in war, as a rule, is to give "good orders or instructions before the men are launched" and after that influence the fight by the "skilful handling of your Reserves" as Von Werder did on the Lisaine, and as Bazaine at Gravelotte and Sassulitch at the Yalu did not.....See also C T Section 12, paragraph 4.....Dry nursing non-commissioned officers and young officers at manoeuvres is an error. I consider, however, that we ought constantly to study and practise, in peace, how best to pass orders and information from front to rear and from flank to flank in action, as far as the situation permits; but as a man cannot run about in the shooting line in war, Umpires should make casualties of those signallers and messengers who may act as in war they could not.

INFORMATION AND RECONNAISSANCE.

20. *C T Section 50 paragraphs 2 and 4, and C T Section 51, paragraph 2.*—Our Embassy guard at Peking and

Ample intelligence is so important that methodical and complete arrangements should be made to obtain it. Nothing should be left to chance. All available means should be employed. In every command some simple method of collecting and transmitting information should be established, and constantly practised in peace.

It should be the constant aim of every officer, non-commissioned officer, and man, during a campaign, especially in action and when the enemy is near, to furnish to his immediate superior, to his subordinates, and to neighbouring bodies of troops, such information as may be of value to them. This he should do even though he may think the person concerned already has the information, as safe conclusions can often be drawn only by collating reports from different persons and places.

All soldiers also should be practised in peace in obtaining information, and in reporting it both verbally and in writing. The clearness of the instructions they receive is a matter of first importance. They should generally be told the points on which information is specially required but hard-and-fast rules as to the amount of information that is to be sent, and regarding the method of obtaining it should be avoided.

Why then, is the system so seldom practised in peace, and why are non-commissioned officers so seldom taught to keep their officers posted as to the situation in the vicinity of their commands?

20. *C T Section 52, paragraph 5.*—In war the positions of

Before and during an action, the following points should be freely reported on, *viz.*, the position of the enemy's guns, entrenchments, and reserves, where his flanks rest, and suitable positions for our own guns and infantry, whence effective fire to cover the advance of attacking troops can be brought to bear on the enemy. The enemy's movements and the effects of our own fire must be freely reported on, both in attack and when defending a position.

the enemy's guns are hard to locate, the positions of their reserves and entrenchments too being difficult to report upon, correctly. (Magersfontein.) At manœuvres this information is seldom looked upon as important. Positions for delivering covering fire, the effect of fire, and the enemy's movements during an action, are not as a rule "freely reported upon" at the ordinary field day.

our so called Escort in Thibet, before the late hostilities in those theatres, can hardly be held to have possessed those arrangements for collecting and transmitting information advocated in combined training, and disaster nearly resulted.

22. *C T Section 55, paragraph 9, and C T Section 56, paragraphs 2 and 3.*—In Somaliland this year, touch of the Mullah was lost after his defeat by General Egerton, probably because the force had no proper cavalry with it.

As a rule, it is an important duty of the commander of a reconnoitring body to gain touch with the enemy and not to lose it when gained; but much depends on the circumstances of the case.

Each man in a patrol, unless there are reasons for withholding the information, should know the object of the mission, so that it may be attained even if the leader is cut off.

To see without being seen is the essence of good reconnoissance work, and this rule must be constantly borne in mind by scouts and patrols. The smaller the reconnoitring body, the greater the need for secrecy and mobility. A patrol resting at night will best ensure its safety by shifting its position after dark.

At Rawalpindi Manœuvres last season, the southern cavalry lost all touch of the northern apparently, on the last two days. In our peace training we do not I think make "each man in a patrol know the object" as we should, nor do we practise patrol leaders in "shifting their positions at night" for safety's sake as often as the Boers taught us to be necessary.

MARCHES.

23. *C T Section 59, paragraph 3, Section 47, paragraph 1, and Section 128 paragraph 3.*—Roberts' marches to Paardeburg and to Pretoria prove that our army can march well.

When troops are marching with a view to bringing the enemy to an immediate engagement, tactical considerations must override all others. Secrecy, rapidity, and absolute readiness for battle are the main essentials to success, and the fighting column should, for the time being, be freed of all such encumbrances as second line transport and supply columns.

March discipline depends largely on the efforts of regimental officers to give effect to the rules contained in the succeeding paragraphs. Under the head of march discipline is included everything that effects the efficiency of man and horse during the march, e.g., the fitting of boots, the filling of water-bottles, arrangements for food or forage on the march, the constant inspection of men's feet and horses' shoes, attention to harness and saddlery during the march, ensuring that men dismount when halted, the prevention of lounging in the saddle, and many details of a similar nature.

Officers commanding outpost companies to which mounted men are attached for patrolling purposes must see that the horses are well looked after, and that not more is required of them than is absolutely necessary.

Our manœuvre marches are sufficiently like war marches as a rule, some being even too much so, as at Rawalpindi last year, where the operations had to "mark time" because the animals were "worked to a halt". What we need is to work our animals and to care for them, so that in war they will keep fit and going. It is unsound to overdo animals at peace training. Lord Roberts sometimes caused mounted

men and Artillery in South Africa to march on foot, and it would be true to "service conditions" if this practice were more common at manœuvres. Orderlies too should dismount when not travelling.

24. *C T Section 74 paragraph 6.*—In civilised warfare and

A ticket, in the following form,
"was unable to keep up" (officer's
signature and date) will be given
to every soldier who falls out dur-
ing a march.

at manœuvres numerous strag-
glers fall out, but in savage war-
fare they do not do so in like pro-
portion, because they may be kil-
led if they do. This slackness is

partly due to our neglect of the ticket system, so successful
in Crawfords Light Division.

25. *C T Section 78 paragraph 1.* Section 82, paragraph 1, and Section 82, paragraph 6.*—Possibly it is assumed that

On the HALT being signalled, everyone halts at once
and falls out, and on the ADVANCE being signalled,
troops at once resume the march.

Every commander is responsible for the protection of
his command against surprise.

A force can only be regarded as secure when protec-
tion is furnished in every direction from which attack
is possible, whether from the front, the flanks or the rear.

It is an error to assume that, because an independent
cavalry force is in advance, troops in rear are perfectly
safe. If the enemy is strong in mounted troops and enter-
prising, he will often find opportunity of avoiding the
independent cavalry and suddenly attacking the
columns or the camps behind it. Local protection
can, therefore, never be dispensed with.

lookouts will always
be posted during
even short halts,
but manœuvre ex-
perience shows that
this is not always
done. The first
casualty in the
Franco-Prussian
war was due to the
neglect of this pre-

caution at a short halt. (Official Account).

26. *C T Section 80, paragraph 1.*—Tel-el-Kebir and

Night marches are undertaken to avoid the heat
of the day, to forestall the enemy, to gain time
either in advance or retreat, or to move troops to a
position of assembly from which to deliver a attack.

Magersfontein show
that in war, night mar-
ches are undertaken; in
peace we practically

carry out very few: but even unsuccessful efforts show us
what to avoid next time.

*This section might be improved if it called special attention to the necessity for full
precautions, during even short halts.

PROTECTION.

27. *CT Section 94, and Section 96, paragraph 2.*—In

Too great a distance should not be allowed to intervene between the rear guard and the force it is covering, lest the enemy should succeed in interposing himself between the two. Moreover, it must be remembered that, when a rear guard halts to fight, every moment separates it further from the main body; whereas with a pursuing force every moment brings its reinforcements closer.

A point of great importance to the commander of a rear guard is judging the proper time to retire. He must constantly bear in mind the difficulty of withdrawing infantry that has once become engaged. If he retires too soon he is only partly carrying out the work required from the rear guard. If he falls into the error of trying to dispute every inch of ground he will lose time, and while he is allowing one portion of the enemy's force to hold him in front, another portion may turn his flank and cut him off.

Tirah a rear guard picquet was left behind and destroyed. In South Africa a certain rear guard leader had to travel "full gallop" to keep up with the force he was covering. At Attock manœuvres 1898 a staff and a rear-party were adjudged to be cut off. Hence we see, that peace and war are alike, in that the desire to be

personally comfortably in camp, causes unjustifiable risks to be run. On the other hand, some commanders hold on too long, and have to be extricated by a force sent back from the column covered, as when the 15th Sikhs went out and brought in the — in 1897.

28. *CT Section 101, paragraph 1, and CT Part VI, Section 151, paragraphs 1, 2 and 3.*—The morning surprise

The commander, directly he decides to halt, should select a position, to be occupied, in case of attack, by the main body.

The troops, on arrival, will be led at once to their areas, and units should be halted on their alarm posts.

Before the troops are dismissed, all necessary defensive precautions must be taken, guards mounted, and police posts established, where necessary. The arrangements of the bivouac, billeting area, or camp will also be explained to the men, e.g., the situation of watering places for men and horses, of bathing and washing places, and of the market. If there is one, the position of kitchens, latrines, and refuse pits, the boundaries of the unit's area and of the district, and other matters of a similar nature.

Pending the construction of the necessary latrines, urinals, and refuse pits, temporary trenches must be at once prepared, to prevent soil pollution.

Everyone must be made clearly to understand what he has to do in case of alarm, the names of all prominent features of ground near the bivouac, billets, or camp, and where roads in the immediate neighbourhood lead to.

that if the foe arrives all ranks know their positions.

Some manœuvre standing orders deal with this question, but in practice the precaution is not always carried out, nor do Umpires often deduct credit for the omission.

of the — shire camp in the early part of the Rensburg operations, shows the result of not telling off the troops to their alarm posts at once, so

29. *C T Section 102, paragraph 2, Section 121 iv, and Section 123, paragraph 4.*—The Boers and the frontier tribesmen too, have often "tapped" our outpost positions at night, guided by the loud challenges of the sentries. Hence, taught by service conditions our training should aim at ensuring concealment, so as to give our assailant the disadvantage of not knowing our dispositions and thus even in peace to keep him in uncertainty. Yet even regiments lately from Africa permit loud challenging.

To see without being seen is the first maxim of outpost duty as it is of scouting. The more an enemy is kept in ignorance of the strength and position of the outpost troops the greater will be his uncertainty; and uncertainty is a most fruitful cause of mistakes and rashness. All troops on outpost must be carefully concealed.

Allow no straying from the picquet, and no noise.

It is the duty of a sentry to see and listen without being seen or heard; and to report the result of his observations.

linging.

30. *C T Section 102 paragraph 4, and C T Section 132, paragraph 4.*—In our peace training we do not practise sufficiently the finding of picquet

The outposts will, therefore, stand to arms one hour before dawn, and remain under arms until the patrols report that there is no sign of an immediate attack. Care should be taken that these patrols do not return till after daybreak.

Moreover, when the outposts are to be relieved, the relief will fall in an hour before dawn, and march at once to the outposts.

The troops relieved will not return to camp until the patrols report all clear.

If outposts are relieved in the morning, the new outposts should parade in time to receive their orders, and to march off an hour before dawn.

positions at night, nor the falling in silently in the dark to carry out outpost reliefs at the hours which war conditions dictate.

31. *C T Section 104, paragraph 1, and C T Section 55, paragraph 9 and C T Section 26, paragraph 12.*—On August 25th, 1870, the German 5th and 12th Cavalry divisions had lost touch of the enemy. (Moltke page 69.)

By day, if an enemy is within reconnoitring distance, which varies according to the country, and there is no body of independent cavalry in advance, there should be enough mounted men with the outposts to keep touch with him and to watch the flanks. If an enemy is beyond reconnoitring distance, there should be enough mounted men to patrol or watch for that distance all the roads by which he may approach the camp or bivouac.

As a rule, it is an important duty of the commander of a reconnoitring body to gain touch with the enemy and not to lose it when gained; but much depends on the circumstances of the case.

A proportion of mounted troops should always be allotted to the general reserve for it is only, as a rule, by this means that the officer commanding this body can keep himself acquainted with the progress of the fight and protect his flanks when he assumes the offensive.

At Rawal Pindi manœuvres last season, the Southern cavalry apparently did a similar thing as the Northern mounted force rode right round them and attacked the cantonment from the rear or Lahore direction.

In the former case the bullets in the Argonnes forest may have had something to do with it, but in the latter, it is difficult to imagine that everybody could have honestly tried his best to carry

out the principles of the drill books or to really "play the game."

In Peace Training, if war conditions are to be simulated at all it is essential that all ranks, staff included, should zealously do their best at all times.

32. *C T Section 114 paragraph 3, Section 118 paragraph 1, sub-section 2, and Section 121 paragraph 11.*—Magersfontein by night, and Nanshan (On Russian Kinchau position) by day, show that artificial obstacles are met with in war. Yet in Peace training obstacles to aid the defence of outpost picquets are seldom made.

As nothing checks the ardour of an attack more than an unexpected obstacle within a moderate distance of the place attacked, impediments should be placed in the way of an enemy's advance, at a spot under fire from the ground where it has been determined to make a stand.

Make arrangements for a protracted resistance by selecting a good defensive position which, if possible, will support, and be supported by, the companies on either hand; by strengthening it artificially; and by deciding how to post his men in case of attack.

Strengthen post as far as practicable, and make necessary sanitary arrangements.

It will often happen that the best position for the sentries, and the best position for the picquet in case of attack, are both just behind the crest of a ridge, or on the edge of a flat-topped hill. In this case, an entrenchment or sangar should be constructed on the crest or edge; but by day it need not as a rule be occupied by the picquet unless the sentries give the alarm. The rule, however, is not invariable: if necessary, the whole of the picquet may be posted in or near the entrenchment, and the sentry over the picquet, in this case double, be given the duty of watching the front.

At night, the picquet is posted in the entrenchment.

shell cannot destroy the whole post. Tribesmen almost always make several sangars, not one only.

33. *Section 121, paragraphs 8 and 9.*—Numerous spots

Cause ranges on possible lines of hostile advance to be taken, marked, and made known to the men.

Arrange for rifles being so laid that at night they will be fired with a certainty of sweeping the approaches effectively.

in South Africa, and the fatal white or marked rocks on the Indian Frontier have claimed the victims of measured ranges to aid the defence of the outposts. In like manner we have been shown what

to expect from weapons aimed by day but fired at night. Yet our peace training in these particulars is not realistic (measuring ranges has been dealt with already in paragraph 12 of this essay.) Firing from rests at night, as taught at Musketry schools and on prepared favourable known ranges near cantonments, does not, in my opinion, resemble war conditions at all.

34. *C T Section 123, Section 127, paragraph 2, and Section 128 paragraph h 2.*—Tel-El-Kebir and Wagon Hill teach the result in war of failure and neglect on the part of outpost sentries and patrols.

It is the duty of a sentry to see and listen without being seen or heard; and to report the result of his observations.

Vigilance, silence and prudence are to be strictly enjoined on all patrols. Their duties are to see without being seen, and once having got touch of a body of the enemy, to keep them in sight as long as possible.

Infantry patrols.—Their number must depend on the nature of the country and on the vicinity of the enemy. In close country, and especially where roads and tracks are numerous, there should always be a patrol out in front of each picquet. In open country, where there are good observation posts, infantry patrols, except in thick weather, or to search ground where the enemy's scouts or spies might find cover, are seldom necessary by day.*

By day they should be preceded and, in open country, flanked by scouts. Daring and intelligent men should be employed on this duty, whom no sound will escape and whose experienced eyes and ears will detect the approach of danger.

* Patrols should go along the roads or tracks in the direction of the enemy for about a mile by day and when possible the same distance by night. If possible patrols should be a mile to the front at day light.

Manchurija is now teaching us the need of practice in outpost work in foggy and thick weather, when surprise is so much to be feared. Our peace condition training falls short of requirements in outpost patrol and sentry work.

35. *C T Section 138, paragraph 2.*—After Ligny the French lost touch of Blucher. At Sharkot in 1895, the tribesmen lost touch of Sir R. Lowe who slipped off from their front and crossed at Malakand. At Pindi manœuvres last season (whether from mistaken orders or from bad patrolling is not quite clear) the Southern army let the Northern force slip away in the night unharmed, after defeating it heavily the evening before. Our retirement from Spionkop was not a route, because the Boers were not aware of it till too late to profit by the information. Here we see peace and war teaching the same lesson, namely that to be successful all ranks must know their duty thoroughly and must carry out that duty with this one thought, "How can I do my part or manœuvre my men so as best to carry out to the full the plans and wishes of my superior officer and to assist my comrades similarly engaged?"

It will often occur, under these conditions, that no orders can be issued as to measures of protection by superior authority; and in any case nothing can relieve the commanders of the advanced battalions and companies of the responsibility of securing themselves from surprise, and unless circumstances forbid, of keeping touch of the enemy by means of patrols.

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SUMMARY OF REMARKS ON TRAINING.

36. In the foregoing paragraphs I have pointed out a few salient cases, in which peace training is not as much approximated to active service conditions as it might be, if

we carried out what Combined Training teaches. Other instances from Combined Training and from the training a books of arms could be quoted, did space permit.

CONCLUSION.

37. Military fads and platitudes, do not, and will not, prepare an army for War. Our Men, Officers and Staff require rather, as I stated before, a continuous sound steady progressive system of instruction, so that all ranks and arms, when the time comes, being well taught and knowing what to expect in war, may be able to apply their knowledge intelligently to the varying conditions of tactics in the field. In short, what is needed is:

“that the training books should be read”,

“that they should be understood”, and

“that their teaching should be carried out.”

SUGGESTIONS.

Calculated, if carried out, to make the conditions of Peace Training better approximated to the conditions of Active Service.

1. Improve the peace distribution of Troops, and timing of practice and exercise camps, and so enable each arm to benefit by working more with other Arms and signallers.

2. Hold numerous Manceuvres, with columns of 200 to 300 men of all Arms, these columns to bivouac with live and raw rations, say 2 nights at a time; harass them with similar columns from barracks. Similar bivouacs to be held in the hills, and before or after field days in the plains. Staff tours can take the place of large manceuvres to some extent.

3. Select and instruct larger umpire staffs, to represent enemy's fire, and to create situations true to war.

4. To avoid fatiguing troops and to allow for proper reconnaissance, let the commander, reconnoiters, and staff parade before the bulk of the force.

5. Each unit to be enabled to borrow men of other arms to help in regimental schemes weekly.

6. In testing or instructing troops or young leaders, give a military situation or simple problem, for solution, leaving the “how” to the subordinates concerned. (Ten dacoits hold that house; turn them out. Troop enemy's cavalry firing on your rear from that bridge; drive them of or etc.).

7. Give instructions "before," not "during" a manœuvre: note errors as they occur at finish, hear reasons on the spot, and offer comments.

8. Patrols, mounted and dismounted, to be out for two or three consecutive nights, fending for themselves other men to be sent to stalk them. Also send parties to shadow and report on all armed parties leaving the lines.

9. Manœuvre fights to be closed by the leaders, guided by the military situation (pursuit, retirement, outposts,) not by umpires bugle. (See paragraph 5 of this essay).

10. When practising "protection" always have some enemy, to try to creep through, or to ambuscade patrols.

11. Practise outposts in thick weather and at night reinforcing relieving working patrols across country.

12. Suppress "manœuvre" or "blank-ammunition" courage.

13. One day weekly, every party (excepting musketry) to be "fair game" for any other corps or arm in the garrison when once off its own parade.

14. Manœuvres to be from bases with lines of supply: avoid the false teaching arising from "dumping down stores".

15. In tactical fitness examinations place "our future commanders" in surprise situations, when really commanding men, vice, asking what they would do if they had men.

16. Practise attack and defence of woods, villages, houses, localities, and marching through woods. (Woerth, Beaumont-le Bourget.)

17. Foster zeal and intra-squadron or company initiative amongst juniors, especially in group and patrol leaders reconnoitring. Do not "dry nurse" juniors with endless orders on field days.

18. Carry out snap shooting and vanishing practices loyally and tactically, not "slimly" to score.

19. Appoint an inspector of infantry.

20. For War Training, employ staff officers, who, knowing war from study and experience, can teach it. Cause all officers to guide their own actions by the war teaching of history.

21. Avoid conventional and stereotyped manœuvre schemes and ideas.

22. So arrange casualties in all branches, as to indicate the kind of fire causing them: reorganise and rally casualties as supporting troops.

23. After constructing entrenchments, let the makers take cover in them, whilst assailants fire ball at targets above them, representing defenders firing.

Failing this, man the works: then examine all round from a distance to see who are exposed.

24. All corps of all Arms, to train in regimental Camp, yearly for at least 14 days: no individual to be exempted: all casuals to "pull up." The best plan is for a part to train, and a part to do guards fatigue and protect cantonments: then "change rounds."

25. When field firing, in addition to moving disappearing and surprise targets, arrange that all the front line of targets collapse when hit: the position to be assaulted or retired from, according as these targets have fallen or not, thus making action dependent on fire effect and military situation.

26. Employ juniors in high positions at manœuvres, for in war shortage of officers and non-commissioned officers has this effect.

27. Suppress the tendency to say "manœuvring does me no good, I was 2 years in Africa."

Battles are not followed by *pow-wows*.

Many war methods might have been improved upon.

DETAILS.

Which if more emphasised at peace training, will cause individuals and units to act more as they have to do in war, and which will therefore tend to approximate the conditions of Peace Training, in a greater degree, to those of Active Service.

1. Flanking fire: concealment therefrom.
2. Overcoming obstacles at night.
3. Making comfortable safe cover.
4. Sentries writing reports.
5. Utilising natural cover.
6. Locating concealed guns.
7. Night firing: improvising rests.
8. Wholesome cooking.
9. Hutting.

10. Regimental enthusiasm: battle discipline. (The Russian Guard at Gorni Dub).

11. Beating areas: organising bursts of fire: waiting aimed for target to appear.

12. Sharpness of vision: using glasses.

13. Realistically estimating ranges. (The W. O. circular of May 10th, 1904 says "daily") place dummies about lines.

14. Controlling fire beyond 600 yds. (not nearer).

15. Observing fire effect, hostile movements, ground, background. (See paragraph 10 of this essay).

16. Distinguishing bogus targets.

17. Realistically replenishing ammunition (say at 1,000 yds. from the enemy; then, after the first assault).

18. Woodcraft: finding ones way.

19. Crawling: getting cover in open.

20. Offering hardest target, leaving cover.

21. Sergeants solving paper schemes.

22. Horse-mastership. (G. O. C. C. 190 dated March 10, 1902.)

23. Animals standing fire.

24. Fitting horse gear.

25. Transport moving on broader fronts.

26. Cavalry—Combining shooting and charging.

27. Quick entraining.

28. Artillery.—Occupying and preparing positions at night ready for daybreak: manœuvring against flanks: howitzers firing direct: hitting targets advancing directly (coast artillery also): quickness (for heavy artillery): inter-battery defence.

The following remarks are not part of the essay at all and are only enclosed as they embody the Corollaries to the ideas in the foregoing pages.

1. The training year in India to commence on January the 1st, and end on December the 31st, (musketry included.) This gives December for final manœuvres when climate and weather are favourable to hard work.

2. Reservists to furnish all garrison employ, Police, Telegraphists, Hospital orderlies, Railway employees, Clerks not on the unattached list, etc.

3. To obtain more cash for inter-unit manœuvring, abolish the gardening, cooking and tradesmen's prizes now in vogue and apply the savings to training (Regimentally).

4. Have permanent mounted infantry.

5. Let the Ordnance Department supply ammunition up to the field of battle, and so set free artillery from ammunition column work.

6. Pack cartridges with paper which will not show up the firers's position, as the present white-brown paper does, after any hot work.

7. Mess tins and rifle magazines to be made so as not to rattle, and thus enable a man to steal about quietly, which he cannot do at present.

THE FIGHTING POWER OF REGULAR AND IRREGULAR TROOPS. 377

BY BERNARD JOHNSTON, ESQ., DISTRICT SUPERINTENDENT OF POLICE.

The relative fighting power of Regular and Irregular Troops is a subject on which reams have been written, and that the advocates of the one will ever succeed in silencing the supporters of the other is more than we dare venture to hope. For the purposes of this paper we may safely admit that there is much to be said on both sides, and that while the Regular is unwise to despise the Volunteer because he is an amateur in professional garb, the Volunteer who considers himself too intelligent to need instruction is never likely to be of much use as a fighting man. *Pace* the quacks, the piano cannot be learned in six easy lessons nor an efficient soldier made by donning military uniform and putting in a dozen parades in the course of a year. The South African Campaign is generally instanced by a certain class of writers as proving to demonstration that Irregulars are individually and collectively as good or better than Regulars for all the requirements of modern warfare. Forgetting or ignoring that the Boers were fighting in their own country and after their own fashion, while our troops were fighting in an unexplored land and after a fashion which necessitated the adoption of entirely novel methods, these gentlemen are never tired of lauding the skill, courage, resourcefulness and marksmanship of our late foes, while they have not words to condemn our dulness and ineptitude. Now to the writer it has always seemed that of all campaigns that in South Africa is the least safe from which to draw definite conclusions, for the simple reason that it was a contest fought out on quite exceptional lines; in an almost unknown country against an enemy uniting the formidable qualities of the savage and of civilization. No doubt the South African operations gave us many useful hints but it has already been proved so far as military theories can be proved in mimic warfare, that the formations and tactics which served us well against the armed mobs of the Republics are in many instances quite unsuited for employment against disciplined armies. We are not though writing an essay on tactics but discussing the relative fighting value of amateurs and professionals, and if as we believe, it is unsafe to make general deductions from the struggle against the Boers this objection does not apply to many other campaigns. The battle of Sedgemoor deserves a passing mention. King James's army was ill commanded

but composed of good material. Monmouth's forces were hurriedly raised and ill equipped but in their ranks were many of Cromwell's veterans and they had the assistance of sundry continental soldiers of fortune; notably the German Buyse. Monmouth who possessed considerable military experience decided on a night attack on the Royal Army which lay with its front protected by deep dykes, as so often happens in night attacks the leading division missed its way, the raw untrained cavalry under Lord Grey fled panic stricken and the foot although they fought stubbornly were eventually cut to pieces by the Royal Horse. Lord Grey has been freely abused for his conduct, to us it seems most unjustly, as in the circumstances he could neither have foreseen the panic nor have controlled his crowd of yokels on horseback. The extraordinary thing is that Monmouth and his staff should have placed what was evidently their least reliable arm at the head of the attacking columns, in the rear they might at least have made an effort to check the pursuit. This we can only suppose is an instance of blind and unintelligent adherence to rule and precedent. The operations of the *Young Pretender* in 1745 convey no lessons of great import as they were on a small scale and carried out under exceptional conditions. They show however that highly trained troops may be confounded and driven from the field temporarily by a novel form of attack, and that an untrained army is almost as much disorganized by victory as by defeat, which are almost the only lessons to be learnt from the fighting in South Africa.

From 1745 to the outbreak of the Civil war in America there is little of interest to the enquirer regarding the relative value of Regular and Irregular Armies as the bloody struggles on the Continent were between trained and disciplined armies, and the American war of Independence was like the Boer war an exceptional contest fought on unusual lines. When the north and south grappled soldiers were afforded a study of surpassing interest. With the causes which produced the war we have no concern, we are interested merely in the lessons which the combat between two armies of Amateurs affords, doubly interested because the combatants were of our own blood and speech. The advantage in numbers armament and money lay with the North, the South had local knowledge, for they fought in their own country, greater skill in arms, and some really talented leaders.

THE FIGHTING POWER OF REGULAR AND IRREGULAR 379
TROOPS.

As regards courage there was nothing to choose between them. The North had the further advantage of a superior navy and the possession of a small body of regular troops. Now let us see what is to be learned from a study of this contest between combatants apparently so unequally matched.

With the exception of the tiny force of Regulars already referred to the Armies on both sides were composed of Irregulars. Cavalry, Infantry, and Artillery all alike were untrained. Such was the demand for officers possessing the merest scrap of military knowledge that at one period of the war the 7th New York Militia was called on to furnish officers for the armies fighting under the orders of President Lincoln, many privates in this fortunate corps were gazetted to the command of battalions. At the commencement of hostilities the popular voice was inclined to decry professional soldiers as it had supreme confidence in the amateur generals. The armies met at Bull Run. In numbers they were pretty equal, but the Northerners splendidly equipped and uniformed made the braver show, with the Yankee force was a large crowd including many ladies who had come out to enjoy the spectacle of an easy victory. The Northern Army advanced and as soon as it came under effective fire fell into confusion, wavered and broke up in utter rout, when the Confederates in their turn advanced. The rebels attempted to pursue but the pursuit soon ceased as the untrained battalions under incapable leaders fell into inextricable confusion as soon as they came under the fire of General Fitz John Porter's detachment of Regular Infantry which covered the retreat. The Southern Cavalry indeed overtook the flying foe, but as they could neither control their horses nor use their sabres they did little damage. The casualty list was absurdly small, in short it was a comic opera battle all through. The populace demanded a victim and one was found in the person of the unfortunate Major General Porter, who was compulsorily retired and whose professional character was finally vindicated more than 20 years after the conclusion of peace. Lee a really great soldier made no attempt to invade the North for although his side had gained the initial advantage he was aware that in numbers and resource he was completely overmatched, manifestly he was committed to a defensive campaign and most skillfully he directed it. He was fortunate in possessing such lieutenants as "Stonewall" Jackson, J. E. B. Stewart, Longstreet, the two Johnstons, Forrest, MacGruder,

Fitz Hugh Lee and A. P. Hill. For some time after the engagement at Bull Run the fighting was of rather a farcical character and the losses relatively small. The Northern Armies were commanded in rapid succession by Wingfield Scott, McLellan, Meade, Hooker, Hooper, Sickles, Fremont all successful as Brigade and Divisional Commanders and all failures when in Chief Command. As the war continued the fighting became more and more desperate, officers were learning to command and the rank and file to obey, the men who ran like hares at Bull Run fought like paladins at Antietam, Cold Harbour, Fair Oaks the battles of the Wilderness and other bloody fields. For four years the dreadful contest continued until the South exhausted by victory had to sue for peace. Now let us briefly inquire into the causes which enabled the comparatively feeble Confederate armies to contend so long and with such success with the mighty Federal armaments. Both sides as we have said before were mainly amateurs but the Confederates possessed many more officers of real talent than did their foes. The talents of the generals largely compensated for the paucity of their commands. Now why should the average Southern gentleman make a better military officer than his brother from the States? The answer to the writer seems obvious. He was accustomed to command. The Southern planters residing on their vast estates were accustomed to rule over great crowds of slaves, to think for and to rule the subservient race was the heritage of the planter. The lawyers, doctors, actors "*et hoc genus omne*;" who held high commands in the Federal Forces had seldom controlled more than a dozen or so clerks or at most a few score labourers. They had not only to learn how to manœuvre but how to administer. Another contributory cause to the many Northern defeats was the superior skill in weapons of their opponents. All through the war the Federals were the better armed, and up to the very end they almost invariably lost more heavily than their enemies. Grant indeed ran the final campaign on the hypothesis that he was pretty certain to be defeated in general actions but that he could afford to lose 6 men to Lee's 1. The question arises, what caused the average Confederate to be a more efficient fighting man than his Federal opponent, and again the reason seems obvious. The Confederate soldier was a sportsman and a hunter by inheritance, the Federal private had in most cases never sighted a rifle until he donned a

blue uniform. Indeed had it been possible to eliminate leadership the South would have shot the North out of action. For there was neither time nor opportunity to teach the heterogeneous collection of clerks, mechanics, shopmen, street loafers, etc., etc., who, attracted by the high pay and lavish bounty offered, enlisted in multitudes, even the elements of musketry. It was indeed a case of the survival of the fittest, for the dull-witted were slaughtered by the Confederate marksmen and the more intelligent their wits sharpened by necessity, learnt in marvellously quick time how to save themselves and how to damage their foes. Yet another reason for the slow progress of the Union Armies was the nature of the battle ground, most of the heavy fighting was done in little known country, the communications were of the crudest and the swamps and forests often impenetrable. What few tracks existed were known only to the inhabitants of the locality. Such advantage did the talented Lee take of his antagonist's ignorance of the *terrain* that for weeks he induced McLellan to believe that he had 300,000 men under his command, whereas he could never muster more than 92,000. We have though not yet mentioned the chief cause of the delay in crushing the rebellion. Briefly it was the inability of the Volunteer Armies to profit by victory. Discipline was slack and after a successful affair the winning side insisted on sitting down and having a good time. As the struggle went on officers like Grant, Sherman, Phil Sheridan, and Burnside, rose by merit and not by political influence to high commands, the mercenaries and Volunteers were subjected to real discipline and the Southern Armies learnt not only what it was to be defeated by superior numbers, but to be relentlessly pursued by them. As soon as the Union Armies became capable of effective pursuit the resistance of the Rebel forces crumpled up, but so long as the victorious armies remained in constitution, sentiment, and discipline, Irregulars they effected no tangible result. It was their fate to learn in the hard school of adversity that soldiers unlike poets are made not born. Let us give them the credit due for learning the lessons so thoroughly and ask ourselves if we cannot profit by it.

MODERN MOBILE ARTILLERY.

BY COLONEL J. L. KEIR, A. A. G.

At the commencement of this paper I should like to say, that my object in writing it, is to endeavour to place before those who have not had leisure to go into the subject a very short, up-to-date account of Mobile Artillery, and for this purpose I have not scrupled to quote, often word for word, from the different articles and books I have read on the subject, and to the authors of which I must once for all acknowledge my indebtedness. The present seems an opportune moment for reviewing the general situation and drawing attention to the great increase in power which we hope very shortly to gain by the introduction of the new Q. F. guns, and also by the proper use and further development of the Field Howitzer. With regard to artillery it is not generally realized that we are about to enter upon a new epoch, and one which will not only be productive of great changes in the tactics of that arm, but possibly in those of the others also.

The actual experience gained in the field by our artillery officers during the past half century, in what may be termed the higher art of their arm, has, in reality, been very small, and in none of our wars during that period have we encountered a power supported by a first class and numerous artillery, in any sense equal to own. I shall no doubt be reminded that the Boer guns were on many occasions more than a match for our own, but they nearly always fought in carefully selected positions from which they retired in good time and although they taught us a good deal in the way of common sense, little experience was gained in artillery science as affected by modern conditions.

Such questions for instance as (1) the proper proportion of Q. F. guns and howitzers to the other arms, (2) the supply of ammunition to a large force constantly engaged and using Q. F. guns, (3) the scientific occupation of an artillery position by a large force of guns opposed to an equal force of the enemy, (4) the best combination of guns and howitzers, and the proper position for these and heavy artillery on the line of march, remain unanswered.

Although the war at present in progress is likely to throw much light on the action of modern artillery, it is hardly to be expected that the most important question of all, *viz.*, what will be the effect of the latest form of field gun in war? will be answered to the satisfaction of artillerists.

As far as is known comparatively few really Q. F. guns, such as are at present in the possession of the French, and with which we ourselves hope shortly to be armed have taken part in the great struggle.

Latterly the Russians appear to have had a good many Q. F. guns, but owing to the badness of their fuses and to the faulty training of their personnel, they do not seem to have derived any thing like the advantages they ought to have done from their use. The Russian Q. F. gun used in the present war although a "long recoil" one, i.e. a gun with which the barrel recoils independently of the carriage, depends on a spade to assist to check the recoil. It fires "fixed" ammunition, but the rate of fire does not probably exceed 16 rounds a minute. The extreme range of the gun is 7,000 yards, the extreme shrapnel range is probably from 5,000 to 5,500 yards. It is a better gun than the Arisaka one but has the following defects—

(1) The gun has no shield; the probable reason for this being that as the carriage has a certain amount of recoil, one cannot be used to the fullest advantage with it.

(2) The powder is not smokeless and tends to reveal the position of the gun. A very serious defect.

(3) The dust thrown up by the spade on dry soil before it has been fairly fixed in the ground also tends to disclose the position of the gun.

In many cases these guns were served out in a hurry and their "personnel" did not in consequence at first do them justice. This no doubt accounts for the disappointing results obtained in many cases, as the superiority of the Russian Q. F. gun over the Arisaka one, both in range and rapidity of fire, is very considerable.

The Arisaka gun, with which the Japanese are armed, is not a quick firer in the true sense of the word, as the following description will prove.

It was built by Krupp from General Arisaka's designs. The weight behind the team is 32 cwt. and it fires a 13 lb. shell. It is not a "long recoil" gun, in fact the barrel does not recoil at all, a rope break being used to check the recoil of the carriage. Its chief peculiarity is that it is mounted very low which adds to its invisibility. From the above it will be seen that it fails in two important

points: (1) the rate of fire must be comparatively slow; (2) a shield cannot be used with it to the fullest advantage. To understand this latter defect it may be explained that a shield would be of little use with our present field gun which has a certain amount of recoil, for at the moment of firing the detachment would have to step clear of the shield and gun, and would then be exposed to fire whereas with a non-recoil gun, provided with a shield, perfect cover from rifle fire and shrapnel bullets for the working numbers is assured. The great advantage of this is manifest. I may further explain with regard to the former defect, that in the service of a gun it is the laying that occupies most of the time, not the loading. For instance a good layer takes between 15 and 20 seconds to lay a gun, on at all a difficult target, each time a recoiling gun is fired; but with the present Q. F. gun which has no recoil, the aim not having been disturbed, the gun requires no relaying after each round, and thus time is saved.

Our new field gun has a range of 7,000 yards with a time fuze accurate up to 6,000. The ammunition is fixed which means that the shell and cartridge are in one. It fires an $18\frac{1}{2}$ pounder shell. The gun is fired by means of a trigger instead of a lanyard. The sights are not on the gun and the latter recoils in a cradle and is what is termed a long recoil gun. It is provided with a shield, and its rate of fire is 15 to 20 rounds a minute aimed and 20 to 30 unaimed, against a cavalry attack.

The most recent additions to mobile artillery are,

- (1) The Q. F. gun.
- (2) The Field Howitzer.
- (3) The Pom Pom.
- (4) The Heavy Gun. (Formerly only used for siege purposes).

It is interesting to consider whether the above have enabled artillery in the field to keep pace with the recent increase in the power of infantry conferred by arming it with a small bore magazine rifle firing smokeless powder. In other words has the proportionate value of these two arms undergone any change in the present time, and if so, to which have modern inventions, and improvements in warlike appliances, given most advantages? We shall now state the artillery side and endeavour to show how according to their more advanced theorists artillerymen propose to utilize the advantages

placed at their disposal by the latest mechanical improvements in their arm.

For a long time the French were the only nation in possession of a real Q. F. gun (*i. e.* one with a defensive shield and no recoil). Q. F. guns were at the time common enough in the Navy, and mounted on permanent mountings on land fronts, but France alone was successful in solving the problem of their application to mobile artillery. It is therefore to French sources we must turn for information as to their proposed use in the field so as to obtain the fullest advantage from the very great increase in power which they undoubtedly confer. A French Officer, Gabriel Rouquierol, has written an excellent work on their tactical employment, a very few brief extracts from which will suffice to show the lines on which it has been decided to work in order to turn to the fullest advantage the great increase in the rate of fire now possible.

It may perhaps add interest to the following extracts when I say that the views of the French writer have received general acceptance on the continent, and Germany in particular, who often seems disposed to receive everything French with distrust, has, through the medium of some of her most distinguished artillerists, expressed concurrence in them.

Since writing this paper the translation of an article in the "Jahrbücher für die Deutsche Armee und Marine" by General of Artillery Rohne has appeared in the May volume of the Journal of the Royal United Service Institute. The title of this is "Optimism in the German Field Artillery". After asserting that the German Artillery have by their dangerous optimism allowed their arm to fall behind that of other European nations and expressing his own complete agreement with the principles of the French fire instructions, the General concludes his article with the following sentence.—

"The necessity for re-arming the field artillery will no longer be disputed by anybody. It is my fixed opinion that changes of organization, in tactics, and in methods of shooting will follow this measure in the direction which I have for a long time pointed out. It is only in this way that the German field artillery can regain the supremacy it has lost."

The following experiment was conducted at Poitiers in 1890-91, and speaks for itself. In this trial the modern Q. F. Gun was pitted against that used by the Germans in

the campaign of 1870 and firing common shell. The result proved that the effect of the modern shrapnel was 60 times as great as that of the common shell. In other words, under otherwise similar conditions, the same result was attained with modern shrapnel in one minute as by the German 4-pr. shell of 1870 in one hour. According to the report on the foreign manœuvres lately received the French claim to be able to fire 17 laid and 26 unladen rounds per minute, and I have seen it said in some papers that the Japanese assert that 4 Russian Q. F. guns are equal in power to 6 of their Arisaka ones, but that, if the Russian fuzes were better, one Russian gun would be nearly equal to two of their enemy's. This gives some idea of the strides made in artillery materiel.

The keynote of Rouquerol's work is that moral disorganization is the fruit of suddenness and surprise in the infliction of material damage, more than of the amount of actual damage itself, and he adds that "The fundamental principle of fire action is that the result obtained should be commensurate with the amount of ammunition expended". *N. B.* Result not effect. In other words, the demoralization produced in troops by the losses they have suffered depends on two different points.—(1) The percentage of loss. (2) The time taken to produce this loss. The following examples make this clear. At the battle of Gravelotte six German batteries lost from 25 to 50 per cent. in a struggle lasting three hours. All except one after refitting were able to continue to take part in the engagement. On the other hand in the Mance ravine at the same battle two batteries of the VII Corps which suffered much less, but whose casualties were inflicted in a few minutes instead of three hours, were unable to put in an effective appearance for the remainder of the day. Again at the battle of Magersfontein, Rouquerol asserts, the Highland Brigade lost 25 per cent. of its strength in 10 minutes. "It was demoralized for the rest of the day and the battle was lost to the English from that moment". What is known as the "knock out" blow in a prize fight is what is required.

We now turn to study the methods by which the French propose to produce this end. Their regulations lay down that artillery fire must be "sudden, of the nature of a surprise, and effective from the beginning."

The "rafale" or shell storm (perhaps so called from the similarity between shrapnel burst over water and the appearance produced by a sudden squall over calm water) has been introduced in the French artillery. It consists of 8 rounds per gun, or 48 in all from a six gun battery. Each two rounds (12 shell) are laid with 100 metres more elevation and the whole 48 fired as rapidly as possible and without further word of command. Thus a space of 400 metres by 100 (the frontage of a battery) would be covered by shell fire in the space of 30 seconds. As an example supposing fire opened at 2,000 yards. Two rounds (12 shell) would be fired at this range. The next two at 2,100, the next two at 2,200, and the last two at 2,300 yards. The Russian "rafales" are often referred to in accounts of actions in the present war. The success of the "rafale" depends upon surprise, which is more possible than formerly owing (1) to the increase in the range of modern field guns, (2) to the greater use made of concealment. And the chief difference between the old and new methods is that the old practice required an extremely exact ranging* with a view to obtaining the greatest possible effect with the least expenditure of ammunition. Special value is now set on obtaining sufficient effect in the shortest possible time.

Though advocates of the concentration of fire the French propose to introduce several modifications into its use. They do not for instance intend to occupy the artillery position by a long and exposed line of guns but divide their force of this arm into (1) guns in action (*en action*), (2) guns unlimbered and ready to shoot (*en position de surveillance*), (3) guns limbered up and ready to move into position (*en position d'attente*), both (2) and (3) remaining under cover; for they say that artillery fire should be employed (1) to destroy an animate objective; (2) to demolish an obstacle (earthworks); (3) to stand by to sweep a certain space of ground. Certain areas which come under the field of fire are registered and the range and fuze for any targets that may cross these areas are determined. Thus opportunity is sought to surprise troops who too rashly expose themselves to overwhelm them with a rapid fire, and as they say pin them to the ground and so render them useless for the remainder of the day.

* NOTE.—Accounts from the seat of war tend rather to discredit this theory as the Russian gunners showed a tendency to "jump" the range while the Japanese methodical method of ranging proved more effective in many instances.

The new regulations lay down that at the commencement of the fight instead of the effect of fire from the massing of guns there should be a massing of artillery in a position of readiness, of which more should never be brought into action than are required to attain the end in view. That breadth of front is more decisive than the number of hostile guns in position. No simultaneous coming into action, but a rapid, instantaneous, and unexpected coming into action, is what the regulations henceforth require. They further say that from the great effect of modern artillery it follows that the concealed occupation of the firing position is of the greatest importance. Whoever by lack of skill informs the enemy of his intention prematurely, exposes himself to the danger of being fired on and annihilated while unlimbering. An instance of the effect of exposure was seen at a recent field day when a battalion in close formation came under artillery fire. With the present guns comparatively small loss would have resulted. Had the battery been armed with Q. F. guns, the infantry would have suffered very heavy loss.

With regard to the concentration and dispersion of guns a good deal depends upon the size of the force and its particular mission. In important actions where a position will have to be assaulted concentration is most necessary, but in Advanced and Rear Guard actions a crafty dispersion may often be employed with advantage. For instance Advanced Guard guns may with advantage be placed at wide intervals with the intent to deceive. The Commander of the Advanced Guard has the sole right of bringing guns into action on his own responsibility. The French and German regulations forbid fire to be opened from guns without the supreme commander's orders especially on the defensive. On the other hand great latitude must be given to the Officer Commanding Royal Artillery in pursuit. He must often act without orders.

In the South African war our own artillery officers are said to have shown a tendency to make hard and fast rules and to stick too closely to fixed principles in the matter of concentration. The abuse of dispersion when all control passes out of the hands of the Officer Commanding artillery was feared too much, and good opportunities were often lost in consequence. Up to the present cavalry has been termed the arm of opportunity. In future artillery may be said to share this title, and enjoy with it the chances of rapidly profiting by fleeting opportunities, which will have to

be seized on and carried out without waiting for orders. Initiative justified by a thorough knowledge of tactics is most important in artillery commanders, who should always be, so to speak, feeling the pulse of the battle and understand what is taking place. The position of an artillery commander is not with his guns, but where he can watch their effect on the enemy and from where he can be ready to make the necessary change in their position, in ordinary circumstances with the concurrence of the officer commanding the force, exceptionally on his own initiative.

With regard to modern ranges for artillery fire the German regulations say that under 3,300 yards it is inadmissible for detachments of infantry equal in strength to a company to remain in the open under artillery fire. At 3,800 yards artillery opening fire on guns in column of route would probably annihilate them.

In the present war the average ranges in the battles of Nanshan and Telissu were:—

Nanshan, an average of 5 ranges gave 4,100 yards.

Telissu, an average of 15 ranges gave 4,000 yards.

Some of the later ranges have averaged considerably over 5,000.

Artillery no longer retires to refit but remains in action which diminishes the losses which would result from an attempt to limber up. Examples of the soundness of this procedure have occurred time after time in the present war. The Japanese gunners leaving their guns and retiring under cover when exposed to the Russian "rafales." When the fire slackened they would return to their guns, make an alteration in their position, and resume the engagement.

Batteries of Q. F. guns are said to be more advantageously composed of 4 than of 6 guns for the following reasons:—

- (1) They are easier to cover in action and less personnel is exposed.
- (2) With the increased supply of ammunition less room is taken up by them in a long column.
- (3) They are handier to manœuvre. This is a question which may affect the proportion of guns to the other arms.

It has been said that the well-understood co-operation of infantry and artillery promises the best results for the battles of the future. How best to attain this is worth some consideration. Telegraphs and telephones will in future be used to secure this end and are in many countries being experimented with. They have been much used in the present war. In their absence we shall have to make use of other methods and the following procedure has been outlined by an officer in the Proceedings of the Royal Artillery Institution: "The Commanding Officer of an infantry battalion in the firing line naturally places himself in a position from which he can observe the progress of his firing line and at least receive early information about it. He should be held responsible for passing this information back to the artillery and for this purpose he should be given two or three selected orderlies from the artillery brigade which is to prepare his advance and support his attack. These orderlies should have a horse-holder to bring their horses to the nearest covered position to themselves. Their presence will serve as a reminder to the infantry commanding officer of the necessity of keeping the artillery informed of his progress. What battery commanders most want to know is the position of their own firing line and its distance from that of the enemy. A simple code might be devised for signalling when this is possible."

If something of this sort were practised at field days we should get nearer to a combination of the two arms than we are at present. It is probable that in future attack orders will be accompanied by a rough outline sketch of the position to be attacked on which will be marked the most prominent points to which names, numbers, or letters will be given. This will enable fire to be turned on to a certain point without delay. For the success of such an arrangement it is important that the position of the commander of the artillery should always be known and he should be in a position to watch the progress of the fight. If he cannot do this himself, his staff officer should keep him constantly informed.

Artillery officers need hardly be reminded that the other arms have their own work on hand and that the responsibility of the proper protection of their guns will always rest with them. They must therefore always assure themselves that their patrols do their work with intelligence, and that their escorts are placed in the best positions to defend them from sudden and unexpected attacks. It

cannot be too strongly impressed on them that the infantry is the arm which wins battles, and that they should therefore study its formations so as to understand what is taking place, and thus be able to foresee and prepare for fresh orders which the general situation dictates, in some cases they will even have to anticipate these.

THE FIELD HOWITZER.

The howitzer is a short piece which can be fired at considerable angles of elevation. With it varying charges can be used, which complicate its service, and make it a curiosity to the uninitiated.

Guns are of no use for attacking troops behind cover, and are valueless against overhead cover. As they are wanting in shell power they cannot be used with any effect against localities and structures. A recognition of the want of a weapon for such purposes led to the introduction of the Field Howitzer. Its rôle is therefore the attack of such targets as modern Q. F. guns by reason of their flat trajectory and want of shell power cannot successfully deal with. Though howitzers are little used against troops in scattered formations in the open or against a moving target, the latter defect being due to their curved trajectory and slowness, howitzer batteries are nevertheless Field Batteries and can be used as gun batteries for direct fire against advancing infantry and sometimes with good effect. The above mentioned shortcomings of the shrapnel fire of modern high velocity guns with their flat trajectories, turned attention to the Field Howitzer and now that shielded guns have made their appearance on the battlefield, the services of this weapon will be still more in request.

Its chief advantages are :—

- (1) That owing to the high angle of elevation at which it can be fired it is possible to get excellent cover for it close up to a parapet. It can in fact be fired out of a deep pit.
- (2) As the angle of descent of its projectiles corresponds with the angle of elevation at which they are fired it can both search out cover and support advancing infantry in a manner quite beyond the power of the flat trajectory gun.
- (3) With howitzers you can fire a high explosive shell.

MOBILE ARTILLERY.

Though the above are the chief advantages of the howitzer, it has others to which we will refer later on. For the time being we will enlarge on these in the order given.

(1) The howitzer is closely allied to the mortar, and the ease with which cover can be obtained for the latter exemplifies how much less trouble is necessary to protect a howitzer than a gun. Dug in, placed behind natural obstacles like woods or hills, or veiled by artificial screens, such as were largely employed by the Japanese in the present war, howitzers are very difficult to locate. As they would as a rule draw the fire of other batteries, this is perhaps just as well. With a hill near at hand it would be well to locate the howitzer battery somewhere below it, using the high ground as an observing station with probably a dummy battery located near the summit.

(2) The steep angle of descent of the howitzer gives it two very great advantages: (1) That cover, and the reverse slope of hills, can be searched out by its fire. (2) That the infantry attack can be supported by it up to practically the last moment.

(1) With a gun anything approaching a steep angle of descent can only be obtained at very long ranges. With a howitzer this effect can be got at the shortest of ranges by using a reduced charge. A writer in the Proceedings of the Royal Artillery Institution has exemplified this by taking the battlefield of Spicheren under consideration. He points out that in the first place had the French who were on the top of the Rothenberg been in possession of the field howitzers of to-day they could have prevented the Germans from massing under cover of the hill at the bottom, with a view to assaulting the position, which they were eventually able to capture. And on the other hand had the Germans had field howitzers in the plain below they might have been able to support their attacking columns by their fire up to the last moment. As it actually happened a battery of guns had to be dragged up the steep slope at great risk to support the wavering infantry, as from below they were powerless to render them any help.

In a country cut up by deep nullahs such as is often found in northern India guns are almost useless, but howitzers can search out ground of this nature with fair effect.

(2) The support of infantry is rightly considered the highest aim of field artillery tactics. Howitzers are most useful for this in the final stages of the infantry attack when the fire from flat trajectory guns becomes dangerous to the troops they are supporting. It is generally accepted that where infantry come within 500 or 600 yards of the point of attack, guns must cease firing as it is no longer safe for them to do so. But at Bergendal in the Transvaal a howitzer battery dropped its Lyddite shells safely 60 yards in front of its advancing infantry, and with most useful effect.

(3) It has been stated that one of the chief advantages of the howitzer is that it can fire a high explosive shell. The value of this projectile as compared with that of the shrapnel shell requires some explanation. A high explosive shell has been described as a "locomotive mine" as its destructive power remains unimpaired at no matter what range it may be used. The power of a shrapnel shell however very much diminishes at long ranges, as the bursting charge merely releases the bullets from the shell and adds nothing to their velocity and therefore the velocity, or man killing power, of the bullets depends on the velocity of the shell at the moment of burst. To exemplify this supposing a shrapnel shell to leave a gun with a velocity of 1,800 feet seconds and that at 4,000 yards range the velocity had fallen 800 feet seconds this would represent the rate and consequently the power of penetration of the bullets at this range. This explains to some extent the reason why at very long ranges the result obtained with shrapnel fire is often so unsatisfactory. The high explosive shell not being dependent for its destructive power on the velocity imparted to it by the howitzer, retains this at all ranges. I understand the Japanese Field Gun like that of the Germans fires a high explosive shell and that these projectiles have often been most successfully employed by them. Shrapnel shell in its present form will have little power against shielded guns specially at long ranges, but a high explosive shell striking a gun would probably put it out of action.

As far as can be gathered from the reports of the battle of the Yalu howitzers were most skilfully used there by the Japanese and with great effect.

The howitzer possesses these advantages over guns in addition to those already enumerated :—

- (a) Greater accuracy owing to the fact that finer divisions in laying can be used, the time of flight being so much longer.

MODERN MOBILE ARTILLERY.

(b) Its low muzzle velocity makes it possible to fire a very heavy shell relatively to the weight of the gun and carriage. ($18\frac{1}{2}$ lbs. is the weight of the present Q. F. shell, a 40 lb. shell is what the advocates of Field Howitzers lay down as the projectile for their future weapon).

(c) The large burst of the shell makes it easier to range with.

(d) There is no "danger angle". This is a technical point it is not necessary to enter into, suffice it to say that the fact makes possible a much more effective occupation of cramped positions by howitzers than would ever be possible by guns.

On the offensive howitzers will be used to turn an enemy out of villages and farms, and during the Employment of howitzers. infantry advance they will perform useful service by searching out the interior of trenches, the reverse slopes of positions, and the nullahs so common in this country. On the defensive, should the attacker assemble in dead ground, the power of firing at the shortest ranges from behind cover will enable them to be used with effect up to, and even beyond, the moment of assault.

Whether howitzers should advance to decisive ranges is a contested point and depends upon circumstances. The effectiveness of a Lyddite shell is not influenced by the range, on the other hand shrapnel can only be used at effective ranges and only at such ranges can we get any real value from varying charges. The great support that howitzers can give to an infantry advance up to the very last moment points to their advancing to the support of the attack when opportunity offers. A Royal Artillery officer has written the following account in the Royal Artillery Institution Proceedings, which gives some idea of what the advocates of field howitzers claim for their weapon, and his terse summing up of their rôle and that of the Q. F. gun makes very clear the mission of both these pieces.

"A howitzer battery in action with gun shields and with ammunition wagons on the French system, in line with the guns giving cover to the detachments, might reasonably challenge a duel with a Q. F. battery, for the shields of the former would protect them from the torrent of shrapnel bullets, but for the latter there would be no protection from the impact of heavy percussion shell. On the contrary they

would offer an ideal target for the gunners of the howitzer battery. So far then from the howitzers being unable to contend with Q. F. guns it appears even possible that the latter may be driven to confine themselves exclusively to indirect fire whenever they are opposed to howitzers. And such a development would be entirely logical, for every improvement in defensive armour has proved a corresponding advance in the weapons designed to destroy it. So the adoption by field guns of shields giving immunity from shrapnel bullets must lead to the adoption of a means for overcoming shields.

"This means we already possess in the field howitzer with its heavy percussion shell, and it is in its rôle as a gun that it is capable of the highest achievements in the domain of Field Artillery tactics. But it must not be supposed from the above that field howitzers will at any time supplant field guns. To suggest this would be to overstate grossly the case for the howitzer which is and must remain an auxiliary to the field gun. It is by the closest co-operation rather than by rivalry between howitzers and field guns that success is to be obtained. The howitzer can be used with most success against stationary targets, the Q. F. gun against those that expose themselves in motion. Thus it is precisely when the target is least favourable to the one that the other can be employed to the best advantage. Perhaps this co-operation could be best secured by an organization that would unite in every brigade of artillery, a proper proportion of howitzers and field guns who would thus be accustomed to manœuvre and fight in unison. Let the howitzers drive the enemy from the shelter of their trenches or natural cover; let the Q. F. guns smite them as soon as they appear in the open. Let the howitzers expel the enemy's guns from their covered positions; let the shrapnel of the Q. F. guns annihilate them when they attempt to limber up."

A description of the powers of the 18½ pounder Q. F. gun has been given and I will conclude this part by quoting a forecast of the future field howitzer.

"We may hope and expect that some day batteries will exist armed with howitzers capable of firing heavy (40lb.) shrapnel and high explosive shell with varying charges giving slopes of descent from 30 to 40 degrees at ranges of from 1,500 to 6,000 yards."

THE POM POM.

The pom pom is the forerunner of the Q. F. gun, and the demoralizing effect produced by this weapon may be expected in a magnified form from the quickfirer. Its chief power lies in the rapidity with which it gets on to its target and the effect it has on the nerves. Surprise and quickness are necessary for its success, and it may be compared to the torpedo boat in naval warfare as in the hands of enterprising young officers it is likely to achieve most. Poms poms should be used singly or in pairs as a larger number would cramp freedom of action and bold initiative. As their range is not very great they would stand no chance if seriously attacked by guns and should not attempt such a contest, although they can often surprise guns in action with the greatest effect.

Their chief use is with cavalry and advanced and rear guards. They can also be used as range finders for machine guns, which often have difficulty in finding long ranges with accuracy.

The pom pom will probably disappear when the Q. F. gun has been well established.

HEAVY GUNS.

Considerable importance is now attached to long range fire, and in order to fire at a long range you must have a heavy gun.

The limit in weight for heavy guns that can be mounted on travelling carriages, and used in the field, may be taken to be 5 tons. This weight is not fixed by the weight behind the team, but by the load which the detachment has to handle in action, as if a gun is unwieldy its service will naturally be slow. Another determining factor in heavy guns is the ground, which under normal conditions will only bear a certain weight; when this is exceeded, platforms have to be provided which increase the difficulties of transport and service.

Mechanical traction has a great future particularly in its application to artillery and with good roads its assistance will no doubt be called in to aid in increasing the mobility of heavy guns. It will also greatly reduce the length of the trains on the march, and facilitate the supply of ammunition.

The chief use of heavy guns is to search far into a hostile position and enfilade its front. To do this they must be placed as

Employment of heavy
guns.

close to the enemy's position as is consistent with safety, *i.e.*, about 4,000 yards. Their range being 10,000 yards, from such a position they can shoot 6,000 yards beyond the enemy's front line into his position, and can thus damage camps and reinforcements.

The old polygonal system of fortification with the heavy guns in the caponnier gives the best example of an ideal position for them, and could a hill be found in the centre of the position forming a salient, this would represent the best position that could be found for them. From a position of this kind they could enfilade the enemy's line for a distance of about 6,000 yards to either flank. All positions chosen for them should give an extensive lateral field of fire, as enfilade fire offers most advantages.

These guns fire a high explosive shell the advantages of which at long ranges have been already pointed out. A section (2 guns) is the best tactical unit for them and is preferable to having them in batteries of 4 or 6 guns as when a number of guns are firing by the indirect method there is considerable complication. The employment of single guns has many disadvantages and should be discouraged.

Firing from behind cover with heavy guns is not as a rule recommended for the following reasons:—

- (a) When used in pairs and at a range of 4,000 yards they do not offer a good target.
- (b) They are certain to have several targets to deal with which makes indirect laying troublesome and slow.

On the line of march their place is near the head of the column. In a retirement near the tail of the main body but not with the actual rear guard.

The reasons for this are that should opportunities occur, as will often be the case, of firing at targets beyond the range of field guns these will be wasted if the long range guns are not so placed in the column that they can be utilised without delay. Also as these guns are now horsed they are much more mobile than they used to be and sections of them can therefore be much more easily employed than when they were drawn by bullocks.

Their rôle in the different phases of the fight are,

(1) *In the attack.*

- (a) By their long range fire to draw a reply from the enemy and make him disclose his dispositions.
- (b) To cover the advance of the lighter guns.
- (c) To assist the field artillery to devote itself to defending the infantry.

(2) *In the defence.*

- (a) To compel an early deployment of the enemy.
- (b) To destroy the enemy's artillery advancing into action.
- (c) To cripple the enemy's light artillery when it reaches effective ranges.

(3) *In pursuit.*—Heavy guns should be pushed boldly forward to catch the enemy at long ranges passing bridges and other defiles or checked in any unfavourable position.

(4) *In retreat.*—They must be carefully used but opportunities may occur of delaying the advance of the enemy through defiles. Their longer range will generally enable them to be withdrawn in time.

The increase in range of all arms, the greater extent of the modern battlefield, the improvements in, and more extensive use of, the telescopes and other optical instruments, and the enhanced mobility of heavy guns all point to their being more extensively used in the future than they have been in the past. At manœuvres, however, their utility seldom receives sufficient recognition and their tactical handling tends to discourage the efforts of battery commanders who feel that the assistance that they are giving to their side is too often disregarded owing to their distance from the operations in which they are actually taking an important part.

MOUNTAIN ARTILLERY.

No mention has been made of mountain artillery. In this branch of artillery art we may well claim to be far ahead of any other nation and our extensive practical experience in this country has enabled us to bring our mountain batteries to a state of almost perfection. Pom poms are being experi-

mented with for mountain warfare and will no doubt be found at times most useful, but what appears to be wanted most is the addition of a weapon with a low velocity firing a comparatively heavy high explosive shell which will enable the mountain gunner to demolish towers and strong sangars. I am unaware what experiments have been made in this direction, but high explosive shell would no doubt be useful if their employment were practicable. Many valuable lives would have been saved in our frontier wars had such a weapon been in the hands of our mountain artillery in the past.

In the present war there has been a good deal of fighting in mountainous country and the Japanese in many cases owe their success to the fact that they have a large number of mountain guns. These they could employ in positions which the Russian Field and Horse batteries, owing to their want of mobility in such country, could never have reached.

RIFLE SHOOTING.

Although strictly speaking the subject of rifle shooting is not directly connected with the matter treated in this paper, it is one of considerable prominence in our artillery at the present moment. Some gunner officers are averse to their men being armed with rifles as they say that the gun is the weapon of their arm and gunners should be taught to depend on it alone for their protection. Moreover, the many duties required of the mounted branches of the artillery are such that there is insufficient time at their disposal to train men in the use of what they consider a superfluous weapon. This view may at first sight bear the stamp of common sense, but the very important fact is lost sight of that in these days a soldier who is incapable of personal self-defence is only a partially trained man. Past history teems with instances of gunners and drivers separated from their guns being called on to share in the defence of garrisons and posts, and unless they have some training, no matter how elementary, in the use of modern firearms, they will be quite incapable of taking their proper share in operations of this nature. At present a large majority of the "personnel" of batteries have no knowledge of the use of the rifle and to place one in their hands would only result in a useless waste of ammunition. The Martini carbine is a very indifferent weapon and much harder to train inexperienced men with than the arm

with which they will shortly be provided. An excellent elementary annual course has been planned for the artillery to carry out and it is reasonable to hope that in the near future every man in a battery will have been able to gain some skill in the use of his "hand gun."

The infantry use miniature ranges for their bad shots, and this kind of training seems exactly what the artilleryman requires before he is taken on the rifle range. The regulations now allow for the conversion of two-thirds of the S. A. blank ammunition allowed to batteries into miniature ammunition. If these miniature ranges are placed in suitable positions in barracks, useful instruction of an interesting kind can be given with a minimum expenditure of time. The time spent in the hills could also be devoted to putting the men sent there through their annual course of rifle shooting as it is often hard to find employment for mounted men at these stations. Lastly to encourage rifle shooting in the artillery special competitions might be opened to them at the annual rifle meetings. Many artillery officers would, I feel sure, gladly subscribe to prizes of this kind, and next season would possibly see a considerable improvement in the attendance of the gunners at these gatherings.

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FRENCH PAPERS.

BY CAPTAIN E. A. F. REDL, 113TH INFANTRY.

Revue du Cercle Militaire.

The January, February, and March numbers of this periodical contain a series of articles dealing in some detail with the battles of Simuchén, Ta-tsi-Chao and Liao Yang. Although the letters quoted are almost entirely from Russian sources or from correspondents with the Russian forces, and thus not unnaturally tinged with a strong Russian bias, they are decidedly interesting and convey a vivid picture of the conditions under which modern warfare on such a large scale is carried out. The intense mental strain involved is well brought out by the various letters which are quoted in extenso with very few superadded comments. A quaint incident is that of a Russian regiment, which, being asked by the commander if they were willing to let the Japanese remain in possession of a certain hill, replied, "Your High Nobility, the sun is now very hot, when it gets a little cooler we will take the hill." The assault was fixed for 5 P.M. and the hill retaken. A feature of special interest is an account given as General Orloff's version of the part played at Yentai, by his division during the battle of Liao Yang, of which the following is a résumé.

Originally directed on Liao Yang, during the night of the 31st August—1st September, General Orloff received orders to occupy with his division, the 54th, a village to the south-east of the Yentai mines. Finding the ground there unfavourable, he advanced slightly to some low hills beyond. The Japanese were in possession of low hills some 3 to 5 versts to his front, and the 17th Corps under General Bilderling 5 versts distant in a straight line on his right. During the night of the 1st September, a note received from the latter conveyed the impression that he was preparing to attack, and expected General Orloff's co-operation. Orloff accordingly issued orders for an advance during the night to a position close to the Japanese, but as the troops were about to move off, a telegram from Army Head-Quarters arrived informing him that the part assigned to him in the General Order was to reinforce General Bilderling if the latter were

General Orloff at once telegraphed to Head-quarters that he had not received the General Order, and that he was standing fast before attacking. He sent a copy of the telegram received to General Bilderling, stating that he had not seen the General Order, that he had countermanded his advance, but that if he saw the 17th Corps assume the offensive he would follow suit. At daybreak on the 2nd September, the General Officer Commanding 35th Division of the 17th Corps informed him that one of the regiments of that division had been engaged during the night with the Japanese, on a hill in front of General Orloff's right. They had been supported, but the result was unknown. Ascertaining by reconnaissance that this hill was still occupied by the enemy, General Orloff launched his infantry to the attack supported by the fire of his guns. During the progress of the fight, at 3 p. m., a message was received from General Stackelberg to the effect that he was marching to support the 54th Division. General Orloff replied that he was engaged on two sides, and could advance no further till support arrived. At this moment only, he received the General Order, from which he deduced that his mission was to protect the left flank of the army. During this time his division was suffering heavily. At 5 p. m., a message from Head-quarters reached him, enjoining prudence in consequence of a local reverse. At this moment, the Japanese executed a determined attack between the 54th Division and the 17th Corps. To avoid being cut off and surrounded, General Orloff fell back in good order on a second position, to which an officer from General Stackelberg brought a message that the latter, 4 versts away, wished to see him. As he was starting the General Officer Commanding 35th Division sent him a message that he was about to prepare by artillery an attack to be carried out at 8 p. m. He communicated this intelligence to General Stackelberg, but the latter ordered him to attack at once. General Orloff designated the Buzuluk regiment (4 battalions) for the attack, and accompanied them in person. They were met by a murderous fire and repulsed, the regiment losing 700 men and 23 officers out of 31. General Orloff himself received four wounds and was taken from the field.

The appearance of the new French Infantry training, which replaces the provisional edition, is noticed at some length in the January and February numbers. The manual is mainly concerned with :—(1). Procedure on the battle-field, which has

been modified in accordance with the improvement of modern weapons, and the consequent, (a) increased difficulty of reconnaissance, (b) necessity of utilising ground to the utmost, (c) paramount importance of fire, and (d) danger of wasteful expenditure of ammunition.

(2). Methods of instruction, which, in view of the reduction of the term of service, entail, (a) the suppression of any movement useless in battle, (b) the strengthening of discipline by the precision with which the few necessary movements are performed, (c) the necessity of avoiding the introduction of undue systemisation, (d) the reduction in bulk of the manual by assimilation of matter common to various units, (e) the development of the intelligence, individuality, and initiative of all ranks. "The fear of incurring responsibility is unworthy of the high character which should distinguish the officer".

These various points are developed and insisted on in greater detail in the course of the work, great importance being attached to the carrying on of instruction, as far as possible, away from the barrack square, and in broken ground; but an equal stress is laid on the necessity of alternating such exercises with more precise drill, as a means of strengthening discipline. Certain modifications of words of command have been introduced.

As might be expected, fire discipline is treated at some length. The nature of fire to be employed is specified as follows:—

1. *Fire by named number of rounds.*—For employment in "the ordinary circumstances of battle" and to regulate the expenditure of ammunition.
2. *Volleys.*—Use exceptional, chiefly during night attacks and at critical moments.
3. *Individual or Independent Fire.*—Chiefly for employment at close quarters.
4. *Magazine Fire.*—To produce the maximum of effect in the shortest time.

On the command "Cease fire", the soldier loads and remains ready to take up the fire "par rafales", a term which may perhaps be rendered by "bursts of fire".

Great stress is laid on the instruction and intelligent action of skirmishers. The two men of a file work together

if one is hors de combat, the other takes over his ammunition. They are to observe the strictest fire discipline, begin and cease fire immediately on the word of their commander and regulate their sights by his command, a course which would seem rather difficult to follow when working at wide intervals.

Few changes are introduced in normal formations of units, but an innovation is the formation of the battalion in "mass", the companies being in column without intervals.

The most important section of the manual comes under the heading of "Infantry in battle," at the beginning of which stress is laid on the necessity of the study of the most recent campaigns by officers. The section is too long to notice here in detail, but the keynote is the great importance of the offensive. Passive defence should never be the consequence of inaction and an offensive defence is the only one from which results may be expected. Powerful reserves are laid down for large units; on the other hand, small units acting in conjunction with others should not, as a principle, make use of reserves. But in each case great latitude is allowed. Continuous lines of skirmishers will be replaced by groups whose distance apart is regulated by the number of favourable lines of approach. Both for attack and defence, the paramount importance of conforming to the nature of the ground is insisted on. The reviewer notes an important change in the matter of patrols during an advance, advanced units now throwing out their own scouts instead of depending as *pace* the former manual on special scouts charged with the duty of pointing out the favourable line of advance. In all this, and in much else, according to our own manuals; there is nothing very new or that is not the corollary of recent campaigns, but without going into further detail, the manual seems to be conceived in a common sense and progressive spirit and as such is welcomed by the reviewer as one likely to produce considerable effect.

REVUE MILITAIRE.

The April number contains a carefully compiled article on the Reorganisation of the Indian Army. The majority of this is taken up by tables of the distribution of troops and by recapitulation of official memoranda, and will be familiar to the English reader, but the conclusion at which the writer arrives may be of interest. "If the map of the

Alghan frontier is carefully examined, and the railway lines attaching it to the Indus, and thence to the railway system of the interior studied, the conclusion is arrived at that it would be easy for the Anglo-Indian army, if at war with Russia, to anticipate their adversaries on the line Hindu-Kush-Kabul-Kandahar, and thus hold the heads of the tributary valleys of the Indus which constitute the only lines of invasion of India. In these conditions, and having regard to the very broken nature of the country, from the Pamir plateau to the deserts of Biluchistan, its strength would seem sufficient to shatter the offensive of an army considerably stronger in numbers than itself."

REVUE DE CAVALERIE.

In the February number, some 30 pages are occupied by an interesting article, which, while dealing with cavalry act on, and the French Cavalry manual of 1899 in particular, is possibly susceptible of a wider application. Very briefly, the writer's contention is that the manual, sound as the principles evolved therein may be, is yet too general in its scope to be always comprehensible to, or easily acted upon by, the majority of officers. In support of his argument, he cites a conversation with a General Officer who recently inspected two cavalry regiments, which, unexceptionable both in riding and drill, were hopelessly at sea when confronted with simple tactical problems involving the preparation for, and execution of an attack. From the writer's experience, he sees no reason to suppose that other regiments are in any better position. He compares the condition of officers confronted with this manual to that of a number of persons to whom the general principles of the art of *natation* have been explained, and who are told to get into the water and put them into practice. Some do so and get through somehow, but the majority stand on the bank and criticize the efforts of the bolder spirits. On the other hand, he argues, if the motions had been previously practised on a table by all, they would be readier to take to the water. He strongly deprecates any desire to formulate anything in the nature of a system of attack or to hamper "initiative", which, however, he considers that individual officers not infrequently confound with "action" whether ill, or well, advised; and in this connection, he mentions an officer who had hopelessly compromised his regiment during manœuvres, congratulating himself on

having been able, at last, to make use of his "initiative". The remedy, the writer would propose to this state of things, is, firstly, very careful progressive instruction beginning with the smaller units, in order that every link of the chain may be thoroughly prepared to take its share in the general strain, and secondly, a system of instruction by which most contingencies likely to arise on service should be provided for in peace time and the various points arising in connection therewith, suggested. His contention is that many officers have not sufficient imagination to think of all these points, though if once suggested to them, they are quite capable of giving them their full value. Albeit one great desideratum of a military manual is its compactness, if it be so exceedingly compact that the officer is, in addition, obliged to consult continually the bulky tomes by the various and often conflicting military luminaries of the day, no great gain in the portability of the officer's library, has, in the writer's opinion, been effected.

REVUE MILITAIRE SUISSE.

The numbers from December 1904 to April 1905, contain a résumé of the Russo-Japanese war, synchronising the various events on land and sea. The account is necessarily of a somewhat general nature.

The new manual of British cavalry training is favourably noticed, though it is considered doubtful whether too much importance has not been attributed to the action of cavalry by fire.

BY MAJOR H. W. R. SENIOR.

Internationale Revue ueber die gesamten Armeen und Flotten (April, May and Supplements).—The most interesting article of the April number describes the organisation of the German Volunteer Automobile Corps. A motorist, who is a member of one of the clubs which form the German Automobile Union, gains admission to the corps on the recommendation of the President of the Union. He must engage—

- (a) to serve with his motor-car throughout the duration of any war,
- (b) in peace time to serve for 10 days at a time thrice in 4 years,
- (c) and to obey absolutely all orders of the Staff to which he is attached.

The members of the corps to be called out are arranged for by the President, who furnishes the War Ministry on the 1st November of each year with a list of their names and addresses and particulars of their motor-cars. When called out each car must be in thoroughly good order and fully furnished with its proper complement of tools and reserve parts. It must have a trained *chauffeur*, who must be a subject of the German Empire. Before being taken on the strength of the corps the car is officially tested under the orders of the War Minister. The engagement to serve can be cancelled before its conclusion on the recommendation of the President of the Union.

The growing importance of the fire-fight in the eyes of cavalry leaders is shown by the review on the new musketry instruction books just issued for the use of the French and Austrian cavalries respectively. This number also contains a good account of the French system of frontier fortifications and of the effect of the new two years general service law in France. The new law reduces the number of men serving with the colours by 110,000 men, being the number of men who under former conditions would be serving for their third year. As a partial set-off, however, all one year service being done away with, 66,000 men will have to serve for a second year. The deficit of 50,000 is made up by raising the number of men re-enlisted, by extending compulsory service to French colonists and dwellers in foreign lands, who hitherto had escaped, and by lowering the standard so as to decrease the number of men rejected as unfit for service.

New Infantry Training regulations have been issued for the Army of the United States. With the exception of the battalion, which is divided into 4 companies of 4 sections, organization in threes has been adopted. So that now in the American Army 3 battalions make a regiment, 3 regiments a brigade, 3 brigades a division, and 3 divisions an army corps.

The May number informs us of the formation of a Wireless Telegraph Section in Germany, to be attached to No. 1 Telegraph Battalion and to consist of 8 officers, 15 under-officers, 85 men and 40 horses. Till now the experiments have been conducted by the Balloon Battalions. The experimental section sent to South-West Africa has been found very useful. It has been determined to fit up wireless telegraph stations in several of the German fortresses.

From the vicarious experience gained in the current war in the Far East Germany has reorganized her submarine mining arrangements. A special submarine mining company of 7 officers, 1 Engineer, and 200 men has been formed at Cuxhaven.

From this number we learn also that France will shortly re-arm with an automatic rifle capable of firing 8 rounds without coming down from the present. The great cost of the re-armament is at present the only difficulty which bars the way to its immediate adoption.

The 61st German Supplement is taken up with lists of gun accidents and of their causes, as far as these are known.

In the 59th German Supplement Major Von Witzleben has an interesting article on campaigning in winter. The writer gives some instances of the power of cold in destroying the fighting power of a force. The most striking of these occurred in the Russian General Perowski's expedition against China in 1831, when, although there was no fighting and the force of 5,000 men was provided with felt tents, the wastage amounted to 11 officers and 3,000 men. Of the 10,540 camels which formed the transport of the expedition more than 9,000 perished.

In the matter of clothing the writer recommends loose-fitting clothing and boots, which would allow of plenty of warm under-wear to be worn.

To prevent the balling of snow under the feet of the horses, straw soles, made a little larger than the inner circumference of the shoes and pressed well home to the frog, stick

firmly, and are recommended. They can be easily removed if necessary. The soles must be made of well soaked long-stalked straw, plaited into strips $\frac{1}{2}$ to $\frac{1}{2}$ inch in width, which are then wound into the shape of the shoe. If straw is not available the frogs should be well rubbed with tar, soap or vaseline. Straw should also be used to bind round the stirrup iron to prevent the feet of mounted men being frost bitten.

Oil or grease in the mechanism of arms is liable to freeze and render them useless, as was lately proved in Tibet. The writer recommends the use of petroleum as a lubricant to obviate this difficulty.

When campaigning in very cold weather stoves must be carried. The writer recommends a stove, which is the invention of Major Scharr and which only adds 44 lbs. to the weight of the kit of a company. The stove is put up outside the tent and hot air brought in by means of tin pipes. The cost is said to be only twelve shillings and sixpence.

In deep snow breast-works may be made of snow in about the same time as in ordinary soil. The snow should be well rammed; $6\frac{1}{2}$ feet of thickness will give cover from rifle fire, while 26 feet is necessary to withstand the direct hits of field artillery guns. Snow breast-works are almost indistinguishable from the surrounding country.

The 73rd French supplement contains several articles of interest. The author of the first article seeks to prove that the rifle-calibre machine gun has a special rôle for the ranges between 600 and 1,400 metres, in which the gunner cannot live and the rifleman has lost much of his accuracy and power. He points out that the heaviest losses of the Japanese have been suffered when trying to cut their way through wire entanglements and suggests that at close-ranges machine gun fire from under cover should be used to cut down the supports of the wire entanglement.

Other articles give the opinions of a Mexican officer on the German Army, to units of which he had been attached for instruction, and compare the fate of the wounded today and in 1870.

Militär Wochenblatt (Nos. 20-52 and Supplement).—In No. 21 Dr. Thalwitzer proves that great harm is done to the knees and feet joints of the German soldier by the high stepping stamping "parade marsch." Nos. 29 and 31 contain long articles on the use of lunging in training remounts.

No. 37 gives some extracts from the Japanese Artillery Regulations. The range is first taken by the Gauteer Telemeter, which is the range-finder that has been in use in the Italian army for nearly 30 years. The centre section fires first, laying with the range thus obtained, followed by the other two sections with ranges 200—400 yards under or over. By this method the Japanese consider that they obtain a long bracket in the quickest manner possible. This is reduced down to 50 yards by the ordinary method of halving the differences. A gun relaying after each shot can fire 4 to 5 shots a minute, single guns with rapid fire can get off 10 shots a minute. With section fire a battery can discharge 16 to 20 shots a minute. Officers of fortress artillery attend all field artillery practices as spectators. The greatest shrapnel range is 5,500 yards with time fuse burning $18\frac{1}{4}$ seconds. The greatest use of cover is made. The Japanese artillery on taking up a position invariably intrenches and obtains cover for its detachments by means of pits.

Nos. 37, 38 and 39 contain a review on Lehmann's work "The Mobilisation of 1870-71." This work is apparently an official publication of the German War Ministry and details the principles and their practical application by Von Roon, through which the German mobilisation was so conspicuously successful for its rapidity and smooth working at the commencement of the war, and throughout its duration for the manner in which the field troops were kept up to war strength and well supplied. Not least amongst the achievements of the German War Ministry was the way in which the French prisoners, amounting to the third of a million, were removed into North Germany and there cared for and guarded. Nothing is more striking in the history of this war than the perfect co-operation with which Moltke, the Chief of the Staff, and Von Roon, the War Minister, worked together. Of Lehmann's work the reviewer says, "it is not only a first-class work of reference on the history of the war of 1870-71, but also a rich mine of information on the claims, which war makes on army organization and military administration, and even of instruction on the ways and means required to obtain the best organization.

In No. 44 the shortcomings of the Russian Supply Department in the matter of clothing, especially of sheepskins and furs, is exposed by quotations from General Petroff.

No. 46 contains a good description of the new city of Harbin which was created by the Trans-Siberian railway and

which the current war, by utilising as its principal base, has so enormously increased.

No. 47 describes the six days autumn manœuvres near Paoting-fu of the 2nd European-drilled Chinese Division against the 3rd under the superintendence of the Chinese General Kh'ia, who was assisted by Japanese instructors from the military school of Paoting-fu. The troops were provided with tents but not with furs or winter clothing, so that they suffered somewhat from frost-bite. The manœuvres were well carried out. The discipline was good, and the marching, over 20 miles daily, was excellent. The third Division consisted of 13 infantry "camps" of 400 men each, 3 cavalry "camps" of 240 men each, 1 pioneer "camp" of 200, 1 train "camp" of 300 men and an artillery detachment of 32 guns.

The 4th supplement for the current year contains two papers. The first is a lecture by General von Bernhardt on leadership in offensive war. The second describes the operations leading to the battle of Ostrolenka in Poland in 1831, when General-field-marshal Diebitsch Sabalkanski at the head of a Russian army defeated the Poles under General Skrzyenezki and destroyed the last chance of Polish independence. The operations form an excellent example of the difficulties experienced in ensuring the co-operation of 2 armies acting on separate lines of advance. The possible advantages of the victory were lost owing to the failure to pursue, which was largely due to the severe forced marches of the preceding movements made by the Russians. The writer's last words may be paraphrased, "The more gloomy the outlook the more vigorous should our actions be!"

BY LIEUT. G. L. BLAIR, 36TH SIKHS.

The new French Infantry Training.

A series of articles on this subject is commenced in the February number, containing a detailed account of the conflict of opinion in the French Army caused by the South African War.

The advanced school is represented by General Negrier, who holds that the development of the modern rifle makes dense formations an impossibility, that the attack must be carried through by swarms of riflemen and that the assailants' main effort should generally be directed against a flank. These views are stoutly resisted by the old school who maintain that the principle of frontal attacks in mass remains sound. The enemy ought to be strongly attacked and held to his ground along the whole line, and when both sides are exhausted by a long firefight, the attacker must throw in fresh troops. The latter, massed against the decisive point, must press forward as rapidly as possible and drive the enemy out with the bayonet. General Brugères in particular holds that extended lines can never have sufficient momentum to drive a determined enemy from his position, and that the decisive attack must be made in mass. It is argued that conclusions drawn from the Boer War cannot be applied to European armies, owing to the Boers' weakness in artillery and their inability to assume the offensive. All, however, are agreed that troops must be most carefully trained to take advantage of natural cover during the long advance under fire.

The old drill book of 1894 laid down a very definite form of attack. A brigade attacked in 3 lines, the first had usually 1 regiment; the second (in close support of the first) 2 battalions and the third only 1 battalion. The battalions of the first line deployed into line at 1,600 to 1,800 paces from the position, and, when within effective rifle fire, to single rank. Bayonets were fixed at 600 paces and magazine fire opened at 400. Very little latitude was allowed to subordinate leaders and the company was regarded as a sort of machine gun. In the manoeuvres of 1901 and 1902 much more extended formations were adopted on both sides and the tendency to prefer flanking movements to frontal attacks

was very pronounced. In 1903, General Negrier was Director of Operations for the manœuvres of the XII and XIII Corps, in which wide turning movements and extended attack formations were the main features. It was obvious that a new drill-book embodying the new ideas was necessary, and in 1904 it made its appearance.

By the Afghan Frontier.

The account of a journey along the Russo-Afghan frontier is continued in these numbers.

The writer describes the Bokharan fortress of Kilif, the point at which Alexander the Great is said to have crossed the Amu-Daria in 330 B. C. It is now one of the most important Russian Customs-houses. In 1902, the total value of the goods passed through the various Customs' posts along the frontier amounted to £450,000. General Kuropatkin when Governor-General, by lowering the import dues, did a great deal to foster Afghan trade, and although the Afghan frontier officials do all they can to discourage it, both imports and exports are on the increase. At one time a considerable quantity of Indian manufactures found their way into Turkestan *via* Afghanistan, but, according to the agents of Russian firms at Chushka Guzar, they can now compete successfully with British trade in Northern Afghanistan, owing to the comparative cheapness of transport from European Russia.

The great obstacle to the development of this trade is the vexatious dues levied on goods in transit at every important town on the Afghan caravan routes, which add enormously to the cost of transport.

From Kilif, the Amu-Daria forms the boundary line, and there is practically no intercourse between the Afghan and Russian posts along its banks. At Chushka Guzar there have been several instances of Russians, who have approached the Afghan bank being fired on, and, on one occasion, a soldier who was swimming after a bird he had shot, was seized by Afghans and only released after several months. The frontier Guard who garrison the line of posts, have but few cases of desertion; when such do occur it is among men from the Caucasus who make their way across the river, turn Mahomedan and settle down as Afghans.

34 miles from Chushka Guzar is the fortress of Termez, founded by General Kuropatkin. The Amu-Daria posts are dependent on the steamboat service for their supplies—in 1903 the river was frozen, and Termez was absolutely isolated for more than 3 weeks. A post-road runs direct to Samarcand over the mountains, but the passes are often blocked by snow in winter. The question of constructing a railway to Termez is thus a very important one: the alignment most favoured is from Farab, down the right bank of the Amu-Daria. It is considered that a narrow gauge-line might well be a commercial success in view of the growth of Russian trade with Afghanistan.

From a Field Diary.

The writer is a company commander in an infantry regiment in Manchuria, which joined the army in the field immediately before Liaoyang. He gives an amusing account of how he had to spend three precious days just before the action in wrestling with his company's accounts, which are apparently kept in the field in the same complicated way as in peace time. He mentions the fact that the field-post worked very well, hardly any letters going astray. The regiment was marched and countermarched for several days, and finally found itself forming part of the left wing of the enormous army grouped round Liaoyang, and took a small part in one of the preliminary engagements.

Thoughts on Cavalry Training.

The main idea running through these articles is that there is now no time to teach a cavalryman anything but the duties he has to perform in the field. The present seat, as laid down in the Russian Cavalry Manual, is most unpractical, and should be abolished forthwith. The riding-school occupies far too much time: the writer considers that recruits should do $2\frac{1}{2}$ to 3 months only and then go out into the field. A winter programme for a squadron commander is sketched out as follows:—(1) Troop training. (2) Drag-hunting. (3) Field movements by troops or half squadrons and patrolling. (4) Small tactical schemes for troops.

It is a deplorable fact that many cavalry officers seize the least excuse (bad weather, cold, etc.) to keep their men in the riding school, thus wasting the whole winter in useless work: every effort should be made to accustom men and horses to unfavourable climatic conditions. Even when snow is lying

much can be done in the way of patrolling, keeping up communication along a line of posts, etc. The present Cavalry Manual requires far too high a standard of training for troop horses and the Higher Cavalry School does a great deal to encourage the belief that the training of remounts is the end-all and be-all of a good cavalry officer. Sword exercise on foot should give way to practice at heads and posts, etc., and more attention should be paid to gymnastics. The writer would like to see 30 to 40 scouts per squadron trained, and all provided with field glasses. Though convinced of the importance of musketry for cavalry, he regretfully concludes that they cannot hope to rival the skill of the infantry, who can devote so much more time to this branch of their training, and considers that the cavalry course should be simplified. 32 "drills" are allotted by the present regulations for squadron training (April and June); 9 to parade movements (which might well be reduced to 6, if the winter's work were made more practical, as suggested above); 2 to musketry; the remainder should all be devoted to outpost training, keeping up communication along a line of posts, etc., including 8 tactical schemes—squadron *v.* squadron. The inspection of a squadron in parade work only is quite useless: it would be an excellent thing if an officer of the General Staff attended throughout the period of Squadron Training. In this way the Staff would be able to form a correct idea of the value of the training imparted, which is now almost impossible.

Something about Port Arthur.

A series of articles on the defences of Port Arthur is commenced in the March number.

After the occupation of the harbour in 1898, an Inter-departmental Commission sat in St. Petersburg to decide on what scale the new Russian possession should be fortified.

General Kononovitch-Gorbatski reported that a garrison of 70,000 would be required, and that the line of land defences would be 96 miles long, in addition to the sea-face. The Ministry of Finance however laid down that a garrison not exceeding 11,300 was sufficient, and the military authorities had therefore to limit themselves to a perimeter which could be defended by this number. Political and financial considerations apparently brought about the adoption of the less

ambitious scheme, it being deemed undesirable to make a greater display of force in the Liao-Tung Peninsula than was absolutely necessary. Finally, a line 12 miles long was selected and the Ministry of War succeeded in increasing the garrison by 5 battalions, whilst their opinion of the unsatisfactory nature of the scheme was freely expressed.

"The projected (first) defensive line has this weakness, that it approaches the town too closely and by permitting the enemy (with the exception of the Northern Section) to occupy favourable positions at a short distance from the line of the defence (2,000 yards and less), fails to protect the town and port from bombardment. In addition the North-Eastern face is subject to enfilade fire, and, in part, can be taken in rear."

An extension of the perimeter to 16 miles was designed, to be put into execution as soon as finances permitted. The scheme was only confirmed in January 1900.

As regards the shore batteries, they were to be provided with 124 guns, including 10 10-inch coast defence guns and 10 11-inch mortars. The town and docks were to be surrounded by an inner line of continuous defences, four miles in length, to secure them from assault.

The writer then discusses the bombardment of the 26th February. The Japanese battleships employed indirect fire from a distance of nearly 10 miles, and, using their 12-inch guns only, fired upwards of 200 rounds. Cruisers standing directly off Port Arthur communicated the results by wireless telegraphy. Very little material effect was produced, though the moral effect was considerable, as the garrison was unable to reply to the fire, and at first could not make out from where it was coming. When the Japanese renewed the attack on March the 9th, the Russians had an observation station near the Liao-tie-shan lighthouse, connected with Port Arthur by telephone, and were thus able to direct the fire of the battleships *Retvisan* and *Tsarevitch* on the enemy's vessels, which was sufficiently accurate to force the Japanese to withdraw. The writer concludes (1) That indirect fire at such high angles is very destructive to the structures of the ships employing it. (2) That the material results do not compensate for the shortening of the life of the big guns which must be used for long range fire (he estimates the life of a twelve-inch gun at 150 rounds.) (3) That the defences of

fortresses need therefore not be extended with a view to denying hostile battleships access to positions from which they can make use of long range indirect fire.

The development of the armed forces of the United States.

In describing the American Army, the points which strike the writer most are the very high large number of desertions from the regular army (nearly 10 per cent.), in spite of the high pay, and the fact that the General Staff has practically no control over the militia and volunteers. Owing to the smallness of the standing army (100,000) these reserves are the most important part of the military organisation, as they would necessarily form the bulk of any American Field Force. The militia of the Southern States, except the cavalry, is in a very unsatisfactory condition. The General Staff is well trained and organised, but the practice of appointing officers to the important post of Chief of the Staff, who are so close to the age limit, that they can only hold the appointment for a short time, is most detrimental to its efficiency. In spite of all defects, there is no doubt that the United States are potentially a formidable military power, the Civil War being sufficient proof of their ability to improvise enormous numbers of serviceable troops, and that the nation is sufficiently imbued with the true military spirit to face the sacrifices required by a great war.

United Service Institution of Simla.

July 1905.

TACTICAL SCHEME COMPETITION.

These schemes are set with the special object of studying the situations which may arise when troops are in close contact with one another, and also looking at the situations from the point of view of both sides.

References to Map "F."

General Idea.

RED and BLUE are at war, the map is RED country, and the frontier runs North and South, some ten miles East of the Map, through WORTH. As a preliminary portion of the general strategic movements, a RED force is concentrating at ABINGDON with the immediate object of covering BOFIELD JUNCTION (B. 6.)

A BLUE force of some two divisions (Without independent Cavalry) is advancing from WORTH (*Vide* square O. 3) with the object of preventing Red assembling South of the GRAND RIVER. Climate, and conditions those of England.

1ST EXERCISE.

Special Idea.

Four Companies Mounted
Infantry.
Two Pom Poms.
One Battery, Field Artillery.
4th Light Infantry.
9th Rifles.

The first Red troops that reach ABINGDON (strength as in margin) are pushed forward, under Colonel A with orders to delay any Blue advance, on the ITCHEN. At 6 P. M. on October 10th, the main body of this detached force arrive at DAREHAM, where the Officer Commanding the Mounted Infantry reports that he met the Blue patrols about DADDY HOUSE and TOWER HILL, and drove them across the ITCHEN, that at 5 P. M. they were holding the crossings of that river, and that he had left RED patrols watching them, further there were signs of a camp in the direction of KIRWAN HOUSE. At the same time the following telegram is received from the Red General Commanding at ABINGDON. "To Occulabis Dareham. Abingdon 5 P. M., October 10th, Hold the Line of the Itchen as long as possible, I shall be at BOFIELD with a Division tomorrow by 5 P. M."

Required.—Your views as Officer Commanding the force at DAREHAM, (Colonel A. . . .) on the situation at 6 P. M. on the 10th October. (b) A brief statement of the

of the action you propose to take. (c) Your orders to give effect to (b).

2ND EXERCISE.

Special Idea.

Two Blue Divisions (without independent Cavalry) have crossed the frontier at WORTH, on the 10th October, and are halting for the night as follows.
Advanced Guard. Advanced Guard, strength as in margin, at LOOSEBURN CROSS ROADS, main body at OXTON HOUSE.

At 6 P.M. the Officer Commanding Blue Squadron of the Advanced Guard, reports to Brigadier General, B.....

1st Brigade—	.....Commanding the advanced guard,
1st Battalion.	that he has been driven back from
2nd „	DADDY HOUSE by at least three
3rd „	squadrons of Red Horse, who have fol-
4th „	lowed him through GLOSTER. He has
1 Squadron, 2nd Dra-	gone. left Blue Cavalry picquets watching
7th and 8th Field Bat-	teries. them on the line KNOCKDOWN
Usual Brigade Trains.	CROSS ROADS, HOWES, HOTEL

JARFIELD CHURCH. He further reports that dust has been seen West of BOSTON COVERT.

Required.—As Staff Officer to the General Officer Commanding Advanced Guard, draw up an appreciation of the situation, and write out the report that you would send to the Officer Commanding the BLUE Force.

3RD EXERCISE.

In continuation of the above situation, at 8 P.M. you receive the Force operation orders for the morrow as follows.

2. The General Officer Commanding, Blue Force, intends to seize the line DAREHAM, CLOONEY CROSS ROADS (C. 6.)

3. With this object the force will advance to-morrow, main body marching at 7 A.M., in the same order as to-day, Advanced Guard under General B.....as to-day.

Required.—Your orders for the march of the Advanced Guard.

4TH EXERCISE.

In continuation of the above, as your Van guard crosses the ITCHEN on the morning of the 11th October, the Officer Commanding your Squadron of Cavalry reports that Red mounted troops are holding HORSE HILL and HOLM HOUSE. At the same time a Pom-pom opens from the direction of JARFIELD HOUSE.....State in detail the action you would take, as General Officer Commanding the Advanced Guard.

Intending Competitors should forward their names to the Secretary of the Institution, together with the sum of Re. 1 when they will receive a copy of the map to which the scheme relates ; together with all instructions.

This Competition will close on 1st December 1905. Solutions received after that date will be treated as "LATE" for adjudication.

NOTE.—Owing to the absence in England of the Adjudicator of the January competition, it has not been possible to publish the results of the competition in this number.

Prize Essay Gold Medallists:

- 1872.....ROBERTS, Lieut.-Col. F. S., V.C., C.B., R.A.
 1873.....COLQUHOUN, Capt. J. A. S., R.A.
 1874.....COLQUHOUN, Capt. J. A. S., R.A.
 1879.....ST. JOHN, Maj. O. B. C., R.E.
 1880.....BARROW, Lieut. E. G., 7th Bengal Infantry.
 1882.....MASON, Lieut. A. H., R.E.
 1883.....COLLEN, Maj. E. H. H., S.C.
 1884.....BARROW, Capt. E. G., 7th Bengal Infantry.
 1887.....YATE, Lieut. A. C., 27th Baluch Infantry.
 1888.....MAUDE, Capt. F. N., R.E.
 YOUNG, Maj. G. F., 24th P. I. (specially awarded a silver medal).
 1889.....DUFF, Capt. B., 9th Bengal Infantry.
 1890.....MAGUIRE, Capt. C. M., 2nd Cav., Hyderabad Contingent.
 1891.....CARDEW, Lieut. F. G., 10th Bengal Lancers.
 1893.....BULLOCK, Maj. G. M., Devonshire Regt.
 1894.....CARTER, Capt. F. C., Northumberland Fusiliers.
 1895.....NEVILLE, Lieut.-Col. J. P. C., 14th Bengal Lancers.
 1896.....BINGLEY, Capt. A. H., 7th Bengal Infantry.
 1897.....NAPIER, Capt. G. S. F., Oxfordshire L. I.
 1898.....MULLALY, Maj. H., R.E.
 CLAY, Capt. C. H., 43rd Gurkha Rifles (specially awarded a silver medal).
 1899.....NEVILLE, Col. J. P. C., S.C.
 1900.....THUILLIER, Capt. H. F., R.E.
 LUBBOCK, Capt. G., R.E. (specially awarded a silver medal).
 1901.....RANKEN, Lieut.-Col. G. P., 46th Punjab Infantry.
 1902.....TURNER, Capt. H. H. F., 2nd Bengal Lancers.
 1903.....HAMILTON, Maj. W. G., D.S.O., Norfolk Regt.
 BOND, Capt. R. F. G., R.E. (specially awarded a silver medal).
 1904.....MACMUNN, Maj. G. F., D.S.O., R.F.A.
 1905.....COCKERILL, Maj. G. R., Royal Warwickshire Regiment.

THE JOURNAL

OF THE

United Service Institution of India

Vol. XXXIV.

October 1905.

No. 161.

EXTRACTS FROM LETTERS AND NOTES MADE DURING AND SINCE THE SIEGE OF DELHI IN 1857.*

(Continued from July's Journal.)

July 10th.—Not much time for chatty letter writing—too many on business. We had another grand scrimmage yesterday—the old story: an attack on my position. The enemy were about 8,000 strong and fought most desperately; the action commenced about half past seven o'clock in the morning, and was not over till 4 P. M. Hard rain the whole time. About 3 P. M. I wrote to Chamberlain and begged to be allowed to act on the offensive; but we had been the whole day under a heavy fire of the round shot, shell and musketry and that I did not think I should lose more men by doing a little business on the offensive; anyhow I thought I should get rid of the scoundrels for the day. He agreed and wrote saying he would himself take them on the right flank, if I would attack them in front, and try and turn their left flank. I sent instructions for the latter movement to the Officer Commanding the Sammy House picquet. Away I went with two companies of my own regiment, two companies, 60th Rifles, under Sir E. Campbell, and 180 of the Guides, in all about 450 men. We drove the enemy before us through the jungle and down the Grand Trunk Road, where they were posted in thousands. About 400 yards from the City walls I halted, as I found I was getting my men under grape from the heavy guns in the Moree and Burn Bastions, also from 8 small guns which the mutineers had brought out, two of which were placed near the canal bridge. I was anxiously looking out for Chamberlain on my right. Presently he rode up himself, when I begged of him to send me guns. He rode off, and in about five minutes up came my old friend Major Scott with four 9-pounders. We were then able to return the fire of the enemy's light guns which had annoyed us

* Contributed by Major R. H. Ewart, D. S. O.

a good deal. After firing about half a dozen rounds from each gun, I gave order for another advance. The enemy evidently thought I was about to enter the City, for they not only withdrew their guns, but the whole of their Infantry, and after entering by the Ajmere Gate they manned the walls, and commenced firing at me from the loopholes. At this time I was within 250 yards of the walls, but had got my men under good cover. I had fairly driven the enemy inside their walls, and as nothing more could be done with my handful of men we withdrew, Scott's guns moving off so quietly, that they could not have been heard by the enemy. The Rifles under Captain Sir E. Campbell, who appears a first-rate officer, lost 5 killed and 10 wounded. One company of 2nd Fusiliers which came up with Scott's guns, 5 killed and wounded. My own Regiment 8 killed, one officer (Eckford) and 26 wounded, Singheer Tappah, my Sirdar Bahadur, wounded through the neck, but is doing well I am happy to say. I got a crack over my old head from something or other, but am not hurt. The total loss in my regiment up to this date 175. High time I got some more men. We must have killed a great number of the mutineers. Carts with killed and wounded were seen going to the City until dark. Our spies say that their loss was very great. Many appeared to think that I ought to have acted purely on the defensive until we were ready to advance our batteries, but in my humble opinion this would have been a very great mistake. The enemy would have at once thought that we were afraid of them, and would have commenced a sneaking advance through the cover the like of which never was before seen; nearer and nearer they would have brought their heavy and light guns until they had completely surrounded us. Their innumerable heavy guns and mortars were bad enough as it was, but what would it have been had we permitted them to approach still nearer. I maintain it was only by driving them back as I did on all occasions that we were able to hold the position we had taken up before Delhi. Latterly their attacks were as feeble as they had at first been desperate; they become more and more disheartened; but this would never have been the case had we entirely shut ourselves up within our defences. For my own part, I never would have acted for one moment on the defensive, situated as we were. When a sortie was to be made I would have at once made it, but at the same time taking care, as I always did, not to get my men under grape range of the heavy bastions, but it will be seen I was overruled latterly and often had to act on the defensive, which always had a bad effect on the Sikhs and Goorkhas. One day one of my little fellows, who had just lost his brother, said, "Sahib, here we are getting knocked over in cold blood; do let us jump over this breastwork and go at the enemy. They think we are afraid of them." "Have patience," was my reply, "and get under cover; I will let you go presently;" upon which he gave a broad grin, and looked quite happy.

July 11th.—The only birthday present I can send you from this place is a Punjab Medal, which was taken from the breast of one

Jankee Singh, sepoy of the 18th Native Infantry, who fought on the 9th, and who was killed by one of my little fellows at the commencement of the action with many more men of that distinguished Corps, which formed part of the the Bareilly Brigade, the whole of which turned out that day and fought most desperately. The enemy came out again yesterday, but seeing I was prepared for them they retired. Heat fearful and many knocked down by the sun.

July 12th.—All quiet except the old Moree Bastion, which annoys us a good deal. Received a note from Chamberlain, saying the enemy intend to pay me another visit to-day. All ready for them, but I do not think they intend an attack to-day; I can generally tell when they are coming out by the strength of their picquets in Vissengange and Pahareepur. My idea is that they wont attack again until they get another Brigade, perhaps the 10th Native Infantry, and may try to take Hindoo Rao's House with their four colours. I shall oppose them immediately. Heavy rains, and enemy's heavy batteries very troublesome.

July 13th.—Hodson writes to me "Colonel Becher desires me to tell you that the Pandies have sworn to take your batteries and position this time positively. What a bore for you. They are all armed and accoutred, and ready to turn out, but the time does not seem to be fixed. As your next appearance will be in Delhi, I suppose I have to say 'good bye;' this will amuse you." They have tried to take my batteries and position 19 different times. They may succeed the 20th, but I have my doubts. All ready for the rascals. Our spies say that the enemy lost about 1,500 killed and wounded on the 9th—they are busy this morning collecting firewood. No move in their camp, which is pitched near the Ajmere Gate; they have no room apparently for all the scoundrels in the City.

July 14th.—Fighting all day. No letter written.

July 15th.—I was attacked again yesterday, the 20th time; they had sworn by all sorts of things they would this time take my batteries and succeed they must. The attack commenced at 8 o'clock in the morning, and we were fighting hard until 6 P. M. At 4 o'clock Chamberlain wrote to me to drive the enemy back and to act in concert with him, that he would take them in flank if I would attack them in front. We drove them into the City, but they succeeded in getting us under the fire of grape from the Moree and Burn Bastions. We suffered severely, in fact lost as many if not more than the enemy. Chamberlain severely wounded. The enemy were in great force between the Sammy House and Pahareepur, where they had light guns. I was requested by Chamberlain to cover the retreat. Heavy Artillery guns moved at a gallop making such a noise on the pucca road that the enemy at once discovered, though they could not see us, that we were retreating; they consequently came out in force, and we had to drive them back a second time, not, however, without a great loss to ourselves. I cannot say what we lost in all. Had three officers wounded, Ross, Chester and Tulloch, the latter severely, and 34 of my little fellows killed

and wounded. I was struck by a spent ball on the shin bone; somewhat painful; a 24-pounder shot shaved my old head, but thank God it is still on my shoulders. I must have more men at this picquet, otherwise I cannot hold the position; these constant attacks have thinned my ranks considerably. My total loss killed and wounded since the 8th June 216, nearly half the regiment.

July 16th.—Every prospect of being quiet to-day. Becher's spies say not. We are working away at the Sammy House; for the future I shall call it Fort Sammy. There never was such ground—nothing but rock and jungle, and most difficult for throwing up breastworks. I have got a light gun battery close to this house, which Smith had got run-up for me in a couple of hours on the morning of the 14th instant; the work was placed in Taylor's hands, and he certainly did not disappoint me or his Chief. I must agitate for more troops at this post; the whole brunt of every attack falls on my position, and, as Baird Smith says, no better use of the troops could be made than to strengthen my hands.

July 17th.—The Moree and Burn Bastions continue to send me their iron messengers, and the old house shakes again.

July 19th.—The Pandies, as they are called, made their 21st attack on my position yesterday. They swore all kinds of things on the holy waters of the Ganga that they would have my post, and that before sunset the people in the City would see me hanged in the Chandnee Chowk. If the infantry could not manage to take Hindoo Rao's House, the cavalry would. They turned out of the City at half past seven o'clock in the morning, and kept us at it until dark. Not a thing had we to eat, and we came home dead beat; I never was so completely done up before. The sun about 2 o'clock was something fearful. We were acting on the defensive until 9 o'clock, when I received an order from Wilson (who is made a Brigadier-General and has taken command). He directed me to drive the enemy from my front and left. This was done pretty sharp by the troops now under me, viz., 180 of 8th and 61st Queen's, 120 of 60th Rifles, 318 of Coke's Regiment, and 200 of my little fellows, which is all I now have, alas! We drove the enemy within their strong walls, but they again came up to their cover, which is not to be described. I lost 15 killed and wounded of my little fellows. Thank goodness I expect 91 from Deyrah. I wish I had a thousand coming. General Reid has left for Simla. His farewell order was issued yesterday. I enclose a copy of one paragraph. The enemy have got reinforcements and talk of coming out to attack me and my position. They hope to wear me out.

July 24th.—The enemy were pleased to attack us again yesterday, but they were not very desperate, and beyond bringing out four light guns to play upon my position, and a lot of men with rifles to snipe at us from a distance behind stone walls and thick jungles, they did not further molest me. Nevertheless they had me out at 8 o'clock in the morning, and I did not return to the house until 5 P. M. So long as they are outside the City in force I can never

move; were I to do so, they would instantly make a rush at my batteries. Some two or three thousand turned out of the Cashmere Gate at the same time, and attacked the mosque picquet and also Metcalf's picquet. These were ordered to advance and drive the enemy back, which was pretty sharply done, but our loss in officers was very great—poor Law killed, Colonel Becher wounded, Colonel Drought (?) wounded, and Captain Money and three other officers slightly wounded. Poor Law was killed with Coke's regiment. He died as every soldier should wish to die—in front of his men, sword in his hand, making a rush at the enemy. He had been with me on the Ridge for about a week, and such confidence I had in him that I gave him command of the Sammy House picquet. A better soldier never lived, and I feel his loss greatly. I wish we had more like him. I have three light mortars for the Crow's Nest, which did good service yesterday. I am cutting away jungle as fast as I can, and daily making my position stronger. Heavy rain to-day; the enemy just now quiet, but hard at work repairing batteries. We shall not take Delhi before we get reinforcements, infantry and guns.

July 28th.—As soon as the mutineers have had their dinner, they are coming in great force, and are determined this time to take my batteries and position. All quiet as yet, and no more in the Ajmere Gate direction. Our wounded start this evening for Deyrah. The enemy got reinforcements on Saturday last, the Neemuch, Mhow, Agra, and a portion of Gwalior mutineers some 10,000 in all, with 8 or 10 guns. The King ordered them to march straight on and to take up a position in our rear at Alipore or Race; however, instead of obeying the orders of His Majesty, they pitched their camp close to the old City of Delhi; they however struck it yesterday morning and where they are gone to I cannot make out; not in our rear; certainly at least not within 6 miles, for that distance I can see with my telescope from my look-out. Our spies still think the enemy are coming out, 15,000 of them, with 100 guns, and that after taking my position, they shall take the camp, but the great danger of all is the 1st proximo, the "Eed." Come when they will, I am all ready for them; please God, they will not after all carry me off a prisoner to the Imperial City which they say they are particularly anxious to do. My recruits have arrived all safe.

July 29th.—I was not attacked after all yesterday. All quiet this morning. I fancy they will leave me alone until the "Eed." We used to send a guard to prevent disturbances during this festival; I wonder if they would like us to send one this time! My poor wounded men left in carts this evening, the Sirdar Bahadur at their head! I fear he will not live; he has a bad wound through the neck. Cholera in the City, our spies say, and fever too. The more the better. Oh! please God, we shall get rid of a thousand or two of the scoundrels. It is not in our camp; I have had no cases in my picquets. Poor Ross was a great loss to me; he would have made a first-rate adjutant. The very day he died, my order appointing him came back confirmed. His wound had nothing to say to his death. He died of cholera.

Eckford I hope to see back from general hospital in a day or two. Tulloch has gone to Mussoorie; his wound is a very severe one.

August 1st.—Here I am writing by a candle light at 2 P.M. It reminds me of poor brother Johns Collins on board the "Colossus." It has been raining very heavily since 12 o'clock yesterday, and it is so dark that we cannot see without a candle. The enemy came out in great force yesterday, with the intention of making a grand attack on front, rear, right and left. They came out of the Ajmere Gate like so many bees. "Sorbea," my head look-out man, came to tell me that the whole of Delhi had turned out. I went up to take a look round, and found it necessary to sound the alarm at once. About ten thousand, with 6 Horse Artillery guns, four 9-pounders, materials for making bridges, etc., were seen coming up in my direction. Away I went to take up my old position on the right and left of the right flank battery. Presently I saw another large force coming round my right, and making direct for the Rohtak road. This force was evidently intended to make the rear attack; but they had a task before them which they did not much relish, that of constructing a bridge over the canal. They were busy at it until noon, when down came the heaviest rain I ever saw. While this force was at work trying what they could do in our rear, some 3,000 infantry, with four light guns, attacked in front and right flank, but they would not come close up, and in fact had no intention of making an actual attack until they could make a combined one on all sides. They had the advantage over us, the scoundrels, in point of keeping themselves and their ammunition dry, as they were able to get into the Kissengange buildings, whereas we were exposed to the heaviest rain until 5 P. M., when the combined attack was given up as a bad job, and they retreated with their guns, and we poor drowned rats to our quarter, in Hindoo Rao's House. About 1 o'clock heavy mortars were taken out to the force in our rear; elephants, camels, covered carts, etc., laden with tents, ammunition, baggage, etc., so that they were determined to make themselves comfortable. A 24-pounder shot just come through one of the upper rooms and killed one of my little fellows. The poor fellow cut completely in two. The poor old house is now somewhat shaky. I must have more sandbags placed to-night to strengthen the walls. The rascals are now coming out, so I must put down my pencil. Just come down from my look-out. About 1,000 of the enemy firing from the buildings in "Kissengange." I won't turn out for them. My picquets are strong enough. I had another orderly killed yesterday. He was standing by my side in the right flank battery, and I was at the time holding out my telescope to him, when a 24-pounder round shot took his head clean off, and then passed through the body of a "Peepa walla," who was carrying my surrahi of tea, which was kept pretty warm by the heat of the sun.

Perfectly wonderful how I escape. Round shots, shell and musketry balls come phit, phit, phoe, phish, past my old head, but still here it is all safe on my shoulders.

August 3rd.—Here I am all safe after the grand "Eed" attack, which was entirely on my position. The engagement commenced at sunset on the 1st, lasted the whole night, and until 4 P. M. yesterday.

The mutineers tried very hard to get in our rear, as I mentioned in my letter of 1st. They managed to get a bridge erected across the canal at Bussie, but it was carried away by the flood. Their guns were for some time left on one side and the cavalry and infantry on the other side. This report was sent me by the General about 4 P. M. on the 1st, about half an hour after I saw the whole force returning, guns, mortars, etc. The mutineers were joined by about three or four thousand from the City, and the whole force, in all about 20,000, came straight on my position. I was prepared for them. The general sent up my supports, as he always does, and we commenced work. The Sammy House was first attacked by about 5,000; at this time I had only 150 of Coke's men in it under Travers, and 50 of the Guides. I at once sent them reinforcements from Rifles and 61st Queen's. At dusk the enemy brought up their guns, supported by a large force, and then commenced the sharpest fire I have yet heard on the whole of my position. Before 12 o'clock we drove them back half a dozen times, the firing then ceased for about a quarter of an hour, and I began to think I had got rid of my friends, but shortly after the moon rose, which they had apparently been waiting for, up came fresh troops from the City singing and shouting on all sides. I passed the word from right to left to allow the enemy to come close up and to keep a dead silence in the ranks. On came the enemy with their guns up the Grand Trunk Road as also up the Kissengange Road. My three light guns which were in battery across the road were all loaded with grape, and when the enemy were close up they opened and round after round with volleys of musketry from the Sammy House had the effect of driving them back again. Still they were within 400 yards of me making preparations for another attack.

This sort of thing went on the whole night, but I managed to hold my own with 4 companies 60th Rifles, 180 strong, 180 of the 8th and 61st Queen's, 200 Sirmoor Battalion, 300 Guides Infantry, and 150 Coke's men, in all about 910 against at the very least 20,000. My troops behaved admirably, all were steady and well in hand, and I never for one moment had any doubts about the result. At day break more troops were seen in Kissengange buildings, and on they came again on the Sammy House. I accordingly sent Sir E. Campbell with a company of 60th Rifles to reinforce the troops at that post. At 8 A. M. they gave us time to get a little breakfast, but before 9 o'clock on they came again at the Sammy House, and it was not before 5 P. M. last evening I had the satisfaction of seeing them in full retreat, guns and all; thus ended the great Eed attack, being number twenty-four on my position. Poor Travers, Coke's second-in-command, was killed in the Sammy House. I have no return as yet of killed and wounded, and I dread looking at the reports. The

enemy's loss must have been very severe. The escapes I have had are perfectly wonderful; people look at me after every engagement and say, "What, are you still untouched?" Thank God for thus sparing me. I hope to keep my old head on my shoulders for some time yet; anyhow until I have seen the Imperial City fall. These persevering villains seem determined to wear us out; our spies say they are coming out again; all ready for them. It was a glorious victory, and I cannot speak too highly of the conduct of the troops under my command. Our spies say the enemy are very much disheartened; they made sure of success. They are after mischief in Kissengange. I daresay they think I cannot see them at work. More batteries to enfilade my position. I must have my earthworks at the Sammy House and Crow's Nest strengthened; they are only musket proof. My Goorkhas have erected all the defences between the Crow's Nest and Sabzeemandi. I have working parties out every night.

August 4th.—Very busy to-day. Only time to say that I am all right; never felt better in my life. I am sending in a report of my last fight.

August 5th.—The mutineers had an inspection parade this morning outside the Ajmere Gate. We heard their bands playing some lively airs, such as "Cheer, boys, cheer;" "The girl we left behind us;" "The British Grenadiers." I tried to send them a few round shot, but they all fell short. News from the City states they are dreadfully disheartened at the result of their grand Eed attack; they still talk of a move to our rear. They will find Nicholson in their way. This morning 5 bales of flannel shirts, blouses, shoes, etc., arrived from Mussoorie for my Goorkhas; the good ladies at that place on hearing that the little fellows were in rags held a meeting, when it was decided that they should themselves provide for our wants, and subscription should be got up amongst the ladies of Landour and Mussoorie, and they should meet daily for the purpose of working, cutting out shirts, blouses, etc., with their own hands. This indeed was very gratifying, and truly grateful I and the little fellows were to the ladies for their great kindness and consideration. We at once turned out in our new suits of coloured shirts and blouses, and it was amusing to witness the look of wonderment the Pandies gave us. They evidently were taken by surprise, and thought I had an increase to my force on the Ridge. Even our old friends the Rifles did not know us again, so smart had we turned out in our new garb. The feeling which existed between the men of the 6th Rifles and my own men was admirable; they called one another brothers, shared their grog with each other and smoked their huqqa (pipe) together. Often were the Rifles seen carrying a wounded Goorkha off the field, and *vice versa*. They had marched together from the banks of the Hindun and had fought side by side for so long that they became quite attached to one another. My men used to speak of them as our Rifles and the men of the 60th Rifles, when mentioning the Goorkhas, "them Goorkhas of ours." Notwithstanding this good feeling there was a good deal of rivalry. My men would never allow

that they were in any way inferior to the Rifles. The emulation consequently was great, and I had always the feeling that I could do almost anything with such men. One was always trying to get ahead of the other, of which I had good proof on the 13th of June, when I drove the enemy out of the strong loopholed serai of Kissengange. I may here mention what an officer of Her Majesty's 10th Regiment said of my men after the battle of Sobraon. He said "he had watched the Goorkhas throughout the engagement, and more especially when we came to close quarters with the Sikhs in their entrenchments, and he felt pretty confident that a regiment of European and well-disciplined corps of Goorkhas would do more together in the field than any corps of Europeans." I remarked that the Goorkhas had not the physical strength of a European, to which he replied, "No; as much pluck they have; but the *esprit-de-corps* in your regiment I see is very great." Here he was right, and this is what I have ever tried to keep up. Indeed without it, I consider a regiment is good for nothing. When a corps has made a name for itself in the field, the men of course know it at the time, but I say, don't let them forget it. Every recruit who is enlisted may understand that he has joined a good fighting regiment, and that if he does not possess sufficient pluck to keep up the name of his regiment that he had better walk off somewhere else. Impress this on every man when he is enlisted, and you at once instil that *esprit-de-corps* which is so much needed in our army. Let every man know what is expected of him in the field, that he must ever be ready to shed his last drop of blood for his Queen and his country, and he, moreover, must not disgrace the name of his regiment. The difference in our army is very remarkable; in some regiments the discipline is all that could be desired, and the *esprit-de-corps* great; in others you see little or none. And why is this? The men are the same; you may see finer men in one regiment than you do in another, but you ought not to see less discipline or *esprit-de-corps*; if you do, the officers are at fault. The discipline in some regiments is remarkably good in cantonments, but the misfortune is they do not take it with them into the field. Some of the detachments I have had with me on the Ridge have positively shown no discipline at all whilst under fire, but I have blamed the officers, not the men.

August 9th.—I thought these rascals had had enough of it after the thrashing I gave them on 1st and 2nd, but it appears not; they attacked me again on the morning of the 6th, and we have been under arms ever since; they came out in great force and took up a position in Kissengange, the same serai I turned them out of on the 17th June, which is close to my right flank. They erected a battery of heavy guns during the night of the 6th and at daybreak on the 7th they commenced pounding me with two 24-pounders. This went on the whole of the 7th, yesterday and again to-day. One battery was not sufficient, so they commenced another sunken battery about an hour ago, and they will have two more heavy guns in position by daybreak to-morrow. These two batteries are within

600 yards of Hindoo Rao's House. I write this from the Crow's Nest and right flank battery. You ask me all sorts of questions about what we are doing, sorry to say I cannot reply. Delhi friends might get hold of my letter. We are pounding away at Kissengange, but cannot silence their guns. Whilst writing a few lines to my wife, General Nicholson came up with Major Norman. I had never seen him before in my life, and I thought I had never seen a man I disliked so much at first sight. His haughty manners and peculiar sneer I could not stand. He asked several questions relative to the enemy's position, and then passed on. Baird Smith was with me at the time, having come up to see if he could do anything for me in the way of strengthening my breastworks. I complained of Nicholson's overbearing manners. He replied, "Yes, but that wears off; I am sure you will like him when you have seen more of him." So I found, and we became the best of friends. He was often with me, and I liked him exceedingly. He used often to come up in the dead of night if there was more firing than usual and ask me if I required more men, that if I did, to send to him, and not trouble the general. One night he sat with me on the top of Hindoo Rao's House whilst a pretty sharp fire was going on. The Sammy House picquet had been attacked, and the Moree as usual took it up and fired showers of grape from the left face of the bastion. It was nothing unusual. The same thing had gone on night after night from the 1st, and I suggested that he had better go back to camp and go to bed. After some little time, he said, "Reid, you have got rather too many Sikhs on the ridge; take my advice and get the general to relieve some of them. They are all very well in their way and fight remarkably well, but don't place too much confidence in them." No man knows them better than I do; I had previously told him of the parley that had gone on at the Sammy House between our Sikhs and the Sikhs who were with the enemy, of whom there were about a thousand. I told him it had made me feel very uneasy at times, and at that very moment I had 600 Sikhs on the Ridge out of 960 which I had under my command. He said again "Get some of them relieved. Good night. If you want aid send one of your orderlies to me." After this he used often to come up, calling out from the bottom of the ladder, which led to my look-out. "Have I permission to pass this sentry of yours? he always stops me"? The last time I saw the fine fellow was on the evening of the 13th September when he came up to make arrangements with me regarding the attack next morning, where we were to meet, and that he would open the Cabul Gate for me from the inside, after I had taken Kissengange and Phareepur. But, alas! I never saw his noble face again. The Bengal Army had need to be proud of such a man as John Nicholson.

August 11th.—I returned from the breastworks at the Crow's Nest yesterday at 2 P. M. They are tolerably quiet to-day, so I take the opportunity of retiring to my den in this house in order to have a little rest, which I find I am in need of, having been out

since the 6th. The villains have found the way to worry us. We had four heavy guns and 6 heavy mortars playing on the Kissengange batteries, but we were unable to silence them. They have directed their fire on the Sammy House, and this house, which they have got the range of. One of my poor little fellows lost his head by a round shot about 5 minutes ago. The poor old house is getting knocked to pieces. Hold it I must, so we must strengthen the walls with sand bags. My total loss in the regiment up to this date 242 killed and wounded—poor little fellows!

August 12th.—This morning the general sent out a small force to some guns which were annoying the Metcalf Picquet. It was admirably done, a complete surprise; 4 guns were taken and a good number of the enemy killed. Showers commanded, and was wounded, as also my dear friend Coke, but neither seriously. Sheriff of the 2nd Europeans killed. Kissengange batteries annoying me a good deal; they completely enfilade my position.

Demi-Official.

MAIN PICQUET, HINDOO RAO'S HOUSE.

August 12th.

My dear General,—My report of the attacks on my position on the night of the 1st and the morning of the 2nd instant was a hurried affair; but I am glad indeed you have given me an opportunity of bringing to notice the names of officers and men who have served under me since the 8th June last. I cannot speak too highly of the conduct of the detachments of the 60th Rifles, who have on all occasions behaved admirably, and ever maintained the reputation of their distinguished corps. I would wish to bring to your notice the names of two officers of this regiment, *viz.*, Captain Campbell and Captain I. R. Wilton, who have at different times commanded the parties on duty at this post, and from whom I always received the greatest assistance. Both are most excellent officers, and I beg to recommend them to notice. My acknowledgments are due to Lieutenant Shebbeare (?), now commanding the distinguished Corps of Guides, who has been three times slightly wounded while on duty with me; also to Lieutenant Hawes, Adjutant, likewise wounded, and other officers doing duty with the Corps. Detachment of the 1st Punjab Infantry and 4th Sikhs have since their arrival in camp been constantly on duty at this post, and have always behaved, on all occasions, with gallantry. To Lieutenant Fisher, the Second-in-command of my own regiment, and the officers doing duty my warmest thanks are due. The conduct of the men you already have been pleased to make honourable mention of. It only remains for me to say that they have done their duty most cheerfully. My thanks are also due to the officers and men of Her Majesty's 8th and 61st Regiments, who have at different times taken the duties at the Sabzeemandi picquet, which is under my command.

Yours sincerely,

CHARLES REID, *Commanding Main Picquet.*

BRIGADIER-GENERAL WILSON, *Commanding Delhi Field Force.*

August 13th.—Kissengange batteries still pounding me. They have knocked my breastworks to pieces, and Fort Samtay is in a bad way. We are not in sufficient force, otherwise we ought to take and occupy Kissengange. It is a very strong place, but there would be no object in taking it unless we are prepared to hold it, which we are not. They would only bring out more guns immediately we retired.

August 14th.—Kissengange very troublesome; the enemy give me no rest; they had me up twice last night, and they came up within 20 paces of this house. It was so dark the picquets could not see them. I only hope they felt our grape.

August 15th.—The enemy have got in our rear again. Nicholson went out with a force last evening, and will attack them this evening I fancy. The villain who has set himself up at Bulandshahr is my friend "Wali Dad Khan," who has a small fort at Malagur. I had the pleasure of pitching two of his guns down a well at Bulandshahr. I was nearly paying him a visit whilst I was at Bulandshahr, but Sapte told me he was not worth it. I accordingly sent my compliments to him and requested him to send his guns to me.

Next morning they arrived.

August 16th.—The heavy guns in Kissengange annoy me a good deal. We cannot silence them. Funny state of things; 24 and 18-pounder shots are sent at our heads with our own guns and we hurl them back again to the enemy. The same shots go backwards and forwards until they are quite worn out. "Look at this, Sir," said a gunner to me the other day, holding up a 24-pounder shot. "She is pretty nearly done, for she is oval instead of round." "Never mind, my man; send it at the villains once more." Bang went the gun and the shot into the Kissengange Batteries, and so goes on this game of pounding with round shot and shell, hammer and tongs. We are very well and very happy in the Main Picquet. They have made the Moree Bastion stronger than ever: counter guards, inner parapets for more guns, etc.; never mind; when we commence with 40 heavy guns we shall make short work of it.

August 17th.—By way of strengthening Kissengange the enemy have thrown a breastwork across the road, near the canal bridge, another across the old channel of the canal. Yesterday they were pretty quiet, and I am rejoiced to say we did not lose a man. Heavy rain all night and again this morning; wretched work for men on picquet duty. I have now 1,060 men on duty at my picquet and am ready for the whole of Delhi. They pound me with their heavy and light guns, but have of late given up attacking me. A little incident worthy of note occurred on the morning of this day. About a quarter of an hour before our usual breakfast time, Dr. Morris's table attendant came into the parlour with a very long face followed by my own "khit" (table attendant) trembling from head to foot;

something had evidently happened, and at length out it came. A 24-pounder round shot passed through the kitchen immediately over the stove on which was placed our breakfast stew. It was not knocked over, our khits informed us, but it was full of plaster and mortar, and sundry pieces of brick. This was a trifle when compared with the intelligence that followed. It appeared that before the shot made its exit through the opposite wall of the kitchen it must needs travel through a box in which were placed, amongst other articles of use, all delicacies of the season, and which had just been sent by Messrs. Peake, Allan & Co. from Umballa. Out came a mug in all manner of shapes, then a piece of salmon tin, and so on; of course we all were in fits of laughter, but the poor khits, who had a narrow escape, did not appear to see the fun at all. Several shots had before struck the cook-room, but this iron messenger was the only one that had done any mischief. It was sent us by our friends in Kissengange, and apparently from the sunken battery, which always gave greater annoyance. The khits, after being laughed into good humour, went back to the stew, which after all was not so bad, though pronounced somewhat gritty. Little incidents of this nature occurred frequently. On one occasion my bunniah (grain seller) had procured a large quantity of flour from camp, and this they had heaped up in front of one of the out-houses, when all of a sudden we heard a thud and then an explosion, and immediately after up went a white cloud of flour. A ten-inch shell had fallen right into the centre of the heap, and had there burst. On another occasion a shell from Kissengange, went through our tents, which were all packed and piled up in a heap near the house. It was amusing to see them when they were afterwards pitched; there was certainly no want of ventilation. At first the Pandies could not get their shells to burst; consequently we did not care much for them, but they found out that the fuzes were not properly secured, and this they speedily rectified. The old house was a good mark for them, but providentially no shell found its way into the "Expense Magazine," which was under the right wing of the house, and where we had a large quantity of powder, at one time as much as 10,000 lbs., the shells, rockets, etc.

August 20th.—No news to send you. Pretty quiet, our spies say that the 9th Native Infantry have asked the King to permit them to go to their homes for a short period. The King has no objection, but wont allow them to take their arms with them, and the 26th Native Infantry has been disbanded by the King for misconduct. They were to have attacked me again yesterday, but thought better of it. They are preparing rockets for me, so writes the general. I have 101 Goorkhas sick in hospital with fever: constant work and exposure is beginning to tell on the poor little fellows. The enfilading fires annoy me a good deal, but the old house stands it bravely; the walls are very thick—upwards of three feet, and all stone.

August 24th.—We shall have 60 heavy guns in position on the 4th proximo. I was down with the Engineers yesterday

morning looking at the proposed site for Battery No. 1. They were out surveying again this morning. Pandey did not approve and came out to see what we were about. One of my little fellows mortally wounded. The Engineers yesterday, however, completed their survey, and returned about 8 o'clock.

August 27th.—The enemy thought we had sent the whole force with Nicholson's column, so took the opportunity of at once attacking me again. They found me at home, and got a good thrashing. All the ladies in the City turned out to see Hindoo Rao's House taken.

August 28th.—His Majesty is coming out to day to see his troops take my battery and position. I shall be very happy to see him, and only hope he will come out of the Moree Gate on the largest elephant he has got. A 24-pounder shot would double up his Majesty's elephant, gold howdah and all. No time for more.

August 31st.—The great Mohurram came off last night. As usual, they came at my poor old head. They commenced with Fort Sammy, but were driven back sharp. They gave it up as a bad business about 12 o'clock and allowed us to go to our beds. I am going to cut jungle to my right under their breastworks, in front of Fort Sammy. The enemy no doubt will try to prevent it—two can play at that game. I mean to drive the enemy from their breastworks, hold them during the night, and destroy the works before we withdraw in the morning; they do not at all approve of the new trench and six-gun battery near Sammy House; when they see our guns in position they will be very desperate, I doubt not.

September 1st.—I drove the enemy from their breastworks last night. No sooner had I got possession of them than 300 hatchets were at work felling trees, brushwood, etc. The work went on admirably the whole night in front of trenches and Sammy House picquet. Pandey in an awful state of mind; and we heard about a dozen bugles in the City sounding first the "turn out," then "the advance," then "double;" then buglers got tired of the above and sounded the retreat, the only one which was obeyed. I relieved the party at 11 o'clock, when a little more popping commenced. At daybreak this morning I found a good deal had been done. I shall now be able to see my friends. I never knew before what force they were in when they attacked the Sammy House, so thick was the jungle on all sides. My breastworks are knocked to pieces, but I shall not have them repaired again, as we advance our batteries at once.

September 7th.—We commenced operations to-night. Heavy Battery No. 1 will be erected during the night, and will open at daybreak; the others will follow. No. 1 Battery is in my neighbourhood, and I have to furnish the covering parties. Not much rest for me to-night. The enemy have erected another heavy battery in Kissengange, and are annoying us a good deal. I have got eight guns in position on the left of the Sammy House, but Reid's Battery, as it is

called, is not yet completed. They will I daresay make another sortie, but I think we can drive them back. Sixteen thousand sandbags were filled last night on Pandy land, and to my astonishment they did not object. I shall probably fill in the trenches the whole of to-morrow, so you must not expect to hear from me. Battery No. 1 was commanded by my old friend Major Brind, who had been constantly on duty with me on the Ridge and who gave most able assistance on the night of the Eed attack; indeed on all occasions the exertions of this noble officer were indefatigable. He was always to be found where his presence was most required, and the example he set to his officers was beyond all praise; a finer soldier I never met.

September 9th.—Our two heavy batteries on right, which are protected by my picquet, are in full play. The Moree replies. Two more batteries will be completed to-night, one of 18 guns and the other of six: the former 320 yards and the latter 160 yards from the City walls. My Quartermaster-Sergeant hit this morning, and now dead. We shall be three days breaching, if not four. Cavalry and infantry made sortie yesterday. No time for more. Kissengange batteries annoy me a good deal.

September 10th.—We are hard at work with our heavy batteries on the left. They will be open at daybreak to-morrow. Whilst they are getting ready on the left we are hard at work here on the right pounding the old Moree Bastions with six guns. The rascals are getting very desperate; during the night they threw up a trench across the front of our batteries, and are now firing from it and annoying us a good deal with musketry. Their cavalry try to get up a charge, but cannot manage it. I had a very narrow escape yesterday, and so had General Nicholson, who was close to me, at my look-out; a shrapnell shell burst right over our heads; three of the balls struck my telescope, which I had in my hand, but I was not touched. The villains will fight it out; that I make sure of. I shall have little work in Kissengange ere I enter the City. I command the 4th column of attack. Have got my orders.

September 13th.—We are still hard at work breaching; the Moree not silent, although it is almost knocked to pieces. I never saw such plucky gunners in my life. Fight it out they will, and every gunner will be killed at his gun. No time for more. Poor Lockhart doing duty with my regiment was dangerously wounded yesterday. A great loss to me. He is a first-rate officer. Every officer in the regiment wounded with the exception of your brother and myself. Hot work in the trenches. The assault will not take place before the 14th. God bless you. I shall not be able to write to-morrow.

Copy of the report of the attack of the 4th Column on the 14th September; addressed to Major Ewart, A. A.-G., dated Hindoo Rao's House, 29th September 1857.

Sir,

For information of the Major-General Commanding the Forces, I have the honour to report that in obedience to instructions received

I directed the troops noted in the brackets (50 H. M's, 60th Rifles, 8th of 61st, 70 of 75th, 160 of 1st Fusiliers, 200 Sirmoor Battalion, 200 Guides, 70 of 1st Punjab, 65 of Kumaon Battalion, and Jummoo troops), 1,200 infantry and 400 cavalry, 2,501 total strength and four guns Jummoo contingent (the greater portion of the main picquet), to form up at 4-30 on the 14th instant on the Grand Trunk Road opposite the Sabzeemandi picquet. Before 5 A. M. all were in perfect order, but the three H. A. guns which were to accompany my column had up to that not arrived. About 5-30 they were brought up to the picquet, but the officer in charge reported that there were only gunners for one gun. I directed him to make immediate enquiries and to get the full complement of gunners as soon as possible, as I had no intention of taking my guns into action. It was now broad daylight, and I was anxiously listening for the explosion of the blowing in of the Cashmere Gate which was to have been my signal to advance. Nothing, however, could be heard to lead me to suppose that the assault had been made. Presently I heard musketry on my right, and soon discovered that the party of the Jummoo troops—400 infantry and 4 guns and 200 cavalry which I had ordered to proceed direct from Camp at 3-45 A. M., for the purpose of occupying Eedghar—had become engaged with the enemy. No time was to be lost, so I at once pushed on the column without the H. A. guns, taking the pucca road for Kissengange. I threw off the 60th Rifles, under Captain Muter, in skirmishing order on the right of the road, whilst a feeling party was sent at a short distance ahead of the column. The enemy had a breastwork 60 or 70 yards on the canal across the road, as also one running parallel to the road, both of which had been considerably strengthened during the night. The enemy allowed me to approach within 50 yards before firing a shot, when they gave a well-directed volley from their first breastworks. The Rifles and Sirmoor Battalion, who were leading, I directed to charge, and the enemy were immediately driven from their breastworks across the road. For some time the mutineers stood on the road, hesitating apparently whether they should retire on the second breastwork or attack the Jummoo troops on the right. Guns at this time would have been of greater service to me, and I much regret that such a mistake should have occurred as to send guns to me without artillery men. I now observe that the enemy had been reinforced from the City, and I found myself opposed to at least 15,000 men. I was just about to make arrangements for a feint attack in front of the Kissengange batteries whilst I made a real one in flank and rear, when I received a wound in the head and was unable to carry out my intentions. I immediately sent for Captain Lawrence (who was my Second-in-command), to whom I had previously given and mentioned my plan of attack on the batteries. Whilst being carried to the rear I met him, and had directed him to take the command and to support the right. Up to this time all was going on admirably, the troops were steady, and well in hand, and I made sure of success; I was not a little surprised

to hear about an hour after that the column had retreated, the Jummoo troops had lost their guns, and were flying back to camp. All that occurred after I fell will be reported by Captain Lawrence.

I have the honour, &c.

(Sd.) CHARLES REID,

Major, Commanding 4th Column of Attack.

P. S.—I regret to add that my losses were very severe, almost a third of the column. The Jummoo troops after I left the field became perfectly disorganised. They rushed in to the main column and caused the greatest confusion, when it became difficult to distinguish a friend from foe. The total loss in my regiment, including the 14th instant, 327 killed and wounded out of 499, all grades.

Palace, Delhi, February 2nd, 1859.

My dear Rotton,

With regard to Kissengange I can only say that were I ordered to attack the place to-morrow, supposing the enemy's heavy guns to be in same place they were in on the 14th September last, my plan of attack would be just what it was then. You have been over the position and know the localities and great strength of the place, and will therefore understand me when I say by hugging the wall of the garden on the left of the road before you came to the canal bridge, and then the loopholed Serai wall, as also the garden which runs parallel to it, places, comparatively speaking, often out of harm's way; the heavy guns in two batteries could not play, nor could the loopholes of the Serai be brought to bear so long, mind you, as the column hugged the walls above alluded to four deep, as I had my troops on the 14th September. The first breastwork across the road close to the canal bridge was taken, as you will see by my report, by twenty-five of the Rifles and my own regiment, but whilst making arrangements for the attack on Kissengange itself and at the breastworks at the end of road I fell wounded in the head, and was thus unable, to my great disappointment, to carry out my intentions, which were as follows:—

The breastworks at the end of the road I knew were very strong, as I had seen the enemy at work on them for days, and I thought it more than probable they would have light guns to play upon us as we advanced upon the road. I therefore intended, after taking the breastwork at the canal bridge, to have made a rush with half of my men at the angle of the Serai wall, whilst the remaining half of the column (after getting rid of the enemy who had manned the garden wall, and which would have been enfiladed) marched parallel to the left column, and thus the breastworks at the end of the road would have been taken in front and rear. The right column would then have brought their right shoulders forward, and the columns would

have then entered Kissengange together at the breach made in rear of the heavy battery. I must here mention that some officers here imagined that I had had the wall of the Serai breached in front of the left battery, and intended to enter there. That would have been madness indeed. The wall it is true had been pretty well breached in front of the left battery, but bad shots made at the battery had done it; the wall behind the batteries was breached by my order, and right well it was done by Thompson of the Artillery, but certainly not in front. Had I attempted an attack and entrance immediately in front of the light battery we should have been knocked to pieces with grape from their two 24-pounders. No; that was quite impossible. The breaches in rear of the batteries, as also the gate (which I could have blown in) through which I had entered on the 17th June, was my intended route into Kissengange, whilst a feint attack was made in front. My object in sending 400 Infantry and 200 Cavalry and 4 guns to the Eedghar was to make a diversion, and to place Trevelyangange between a cross fire, as also to watch the enemy and to prevent our flank being turned. After getting possession of Kissengange, I should have turned the four heavy guns, and also the 8-inch mortars which they had there, on Trevelyangange. The fire from these guns (as also from the guns which I ought to have had with me) and the fire which would have been kept up by the four guns from the Eedghar, would have made Trevelyangange too hot for the enemy, and I calculated on their retreating into the City. Certain it is I should have not attempted to have turned them out of Trevelyangange and Pahareepur with my Infantry. My column was not strong enough for that, and I should have lost half my men before I entered the City. Had the enemy left Trevelyangange, which I think they would have done when they found themselves under the fire of artillery from Kissengange and Eedghar, I should have left 400 of the Jummoo Contingent in the Serai, whilst I proceeded with the rest of the column along the dry bed of the canal, and have entered the City at the Cabul Gate, which General Nicholson would have opened for me from inside. This was the intended attack on Kissengange. A good deal of course would have depended on circumstances, but certain it is, I should have not entered the City so long as the enemy were in force on my right. Some say, why not have gone more to the right, and have given Kissengange a wider berth? Had I done so the enemy would have got in between my left flank and the Sabzeemandi which our spies told us they intended to do. Others again say, why not have taken the same route you took on the 17th June, when you succeeded in taking the place? To which I reply, for the same reasons I have given above—my flank would have been turned. In conclusion I must say that it was my desire that Kissengange should have been attacked before daybreak, but it was decided that all should attack at the same time, and that my signal to advance was to be the explosion of the blowing in of the Cashmere Gate. This did not take place until a quarter of an hour after sunrise, by which time, of course, the

enemy were on the alert and quite ready for us in Kissengange. You are at liberty to publish the above verbatim.

Yours sincerely,

(Sd.) CHARLES REID, Major.

Commanding the 4th Column of Attack.

Reverend I. Rotton,

Chaplain, Delhi Field Force.

Kissengange was evacuated by the enemy on the morning of the 6th, all their heavy guns and mortars being left in the batteries. A party was sent from Hindoo Rao's House to take possession of them, and they were brought safely up to the Ridge. The immense strength of the position astonished all who afterwards inspected it. I was unable to go over the place myself till the end of November, not having sufficiently recovered from the effects of my wound. As may be imagined, I went over the Serai of Kissengange, which I had taken on the 17th June, with the greatest interest. The insurgents had certainly spared no labour to improve what was then even immensely strong, and from the 6th of August they had been daily employed in erecting breastworks, batteries, etc. Trevelyangange and Pahareepur were also considerably strengthened, and the wonder is the enemy left the position without another struggle. The bullet marks on the canal ridge, the serai wall, and garden walls should pretty clearly show what had been sent at any column, and the only wonder is our loss was not even greater than it really was. I will not attempt to describe my feelings as I strolled over my old position on the Ridge. When I looked at the ground round about Hindoo Rao's House, ploughed up with shot and shell, the rocks uplaid and covered with bullet marks, trees cut into two, and branches torn, and the old house itself riddled through and through with shots and shell, fragments of which still lay on the ground, although cart loads have been removed, it appeared, if I may use the expression, even more than a miracle that I stood there gazing upon the scene. When I looked at the particular places in the Sabzeemandi where I had seen my troops on the 23rd June driving the enemy before them, again retreating under a burning sun, a deadly fire of artillery and musketry and vastly superior force, I put up my hands and said, "Can it be, is it possible; am I really living after all I have gone through." My feelings of gratitude to our Merciful Father who had protected me from constant exposure and danger for three months and eight days, I will not attempt to describe. On the strength of Delhi itself I need not speak, but it did not consist in its own actual defences only, though these were very much undervalued. The Moree, Cashmere, and Burn Bastions had been greatly improved by our own Engineers (Baird Smith among them) some years before, and presented regular faces with properly cut embrasures. The length of the wall was 24 feet above ground level, 9 feet of which was a parapet three feet thick, the remainder being four times that thick.

ness: outside the wall was a wide berm and a ditch 18 feet and 20 feet deep and wide, respectively, at the bottom. The glacis covered the lower 10 feet of the curtain walls connecting the bastions with loop-holes. Added to these strong defences, it must be remembered that the enemy possessed a magazine containing upwards of two hundred guns and sufficient ammunition for half a dozen sieges, while their number of trained troops and excellent gunners were certainly three or four times the strength of the besiegers. But all this has already been written, so I need not dwell upon it, but sufficient it is to say that the contemplated *coup-de-main*, first in June and after in July, would, in all human probability, have proved a signal failure. I cannot conclude without alluding to the noble behaviour of the officers and men of the Bengal Artillery who served under me on the Delhi Ridge. I more than once made mention of their gallant conduct in military reports, but as I before stated these were never published, which I cannot but regret. There can be no brighter message in the history of the Delhi Siege than that which will tell of their trials and exertions before Delhi. The Engineer officers were most laborious, and they were much exposed. The Delhi Siege was a good school for our young Engineers, and it certainly brought out their abilities; they were constantly exposed to burning sun and a deadly fire, as their losses clearly showed, being nearly two-thirds in killed and wounded. It would not be possible to speak too highly of Colonel Baird Smith and Major Taylor, from whom I received every assistance; they were ever ready to meet my wishes and every effort was used by them to strengthen my position on the Ridge. For our ultimate success we have to thank these men. Owing to a wound received by Colonel Baird Smith the entire superintendence of the siege operations devolved on Taylor, and a more energetic officer I never met; the rapidity with which he completed No. 3 Battery on the night of the 7th September was perfectly surprising; no one was more taken back than Pandey himself when the day dawned and he beheld six 24-pounders within 600 yards of him. Although these notes are not now intended for publication, I cannot close them without expressing my heartfelt gratitude to all officers and men who served under me from first to last. Their courage and endurance and their cheerful obedience to all orders they received won my esteem; and I have to thank them for the high honour I have received from Her Majesty. Without such men I never could have held the position entrusted to me.

PART IV.

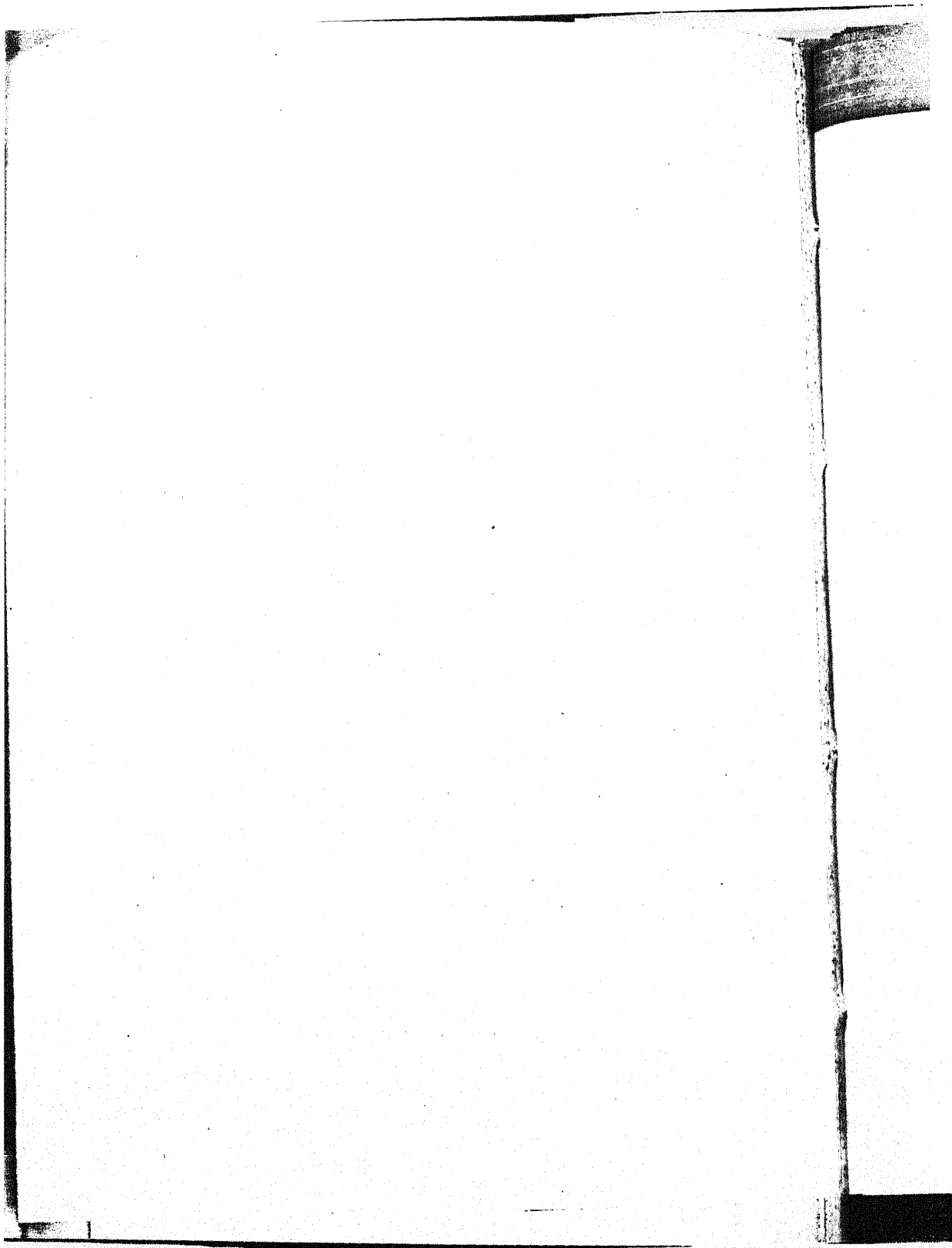
THE EVOLUTION OF MODERN TACTICS.—(*Concluded.*)

BY MAJOR G. GILBERT, 34th PIONEERS.

In my previous paper I dwelt on the initiation by Napoleon of the tactical employment of separate masses in co-operation, citing Mondovi and Ulm as the two most brilliant and instructive examples of the *concentric order of attack* of which he was the originator. It is interesting to observe that he applied the same principles with equal success under the conditions of savage warfare, by merely altering the normal column formations into hollow squares (see plan of the battle of Mount Tabor) with results as crushing and decisive as were gained in like manner at the Battle of the Pyramids. To many it may seem that his great superiority in numbers at Ulm gave him an advantage over his adversary, which militates somewhat against the too ready acceptance of the unquestionable pre-eminence of his system of tactics under all conditions. Such a contention could hardly be advanced as regards Mondovi and Castiglioni unless we deliberately shut our eyes to the fact that his system was essentially based on the fundamental principle of strategy, as of tactics, which requires superiority of strength at the decisive point. The mere fact of Napoleon's superiority at Ulm does not in the least detract from the skilful conception, method, and execution of the plans that completely paralysed the Austrian General and demoralized his forces. Had the Emperor moved his grand army in the orthodox manner of his times in parallel columns in close proximity and on a narrow front, and had he deployed and attacked the enemy in the parallel order of battle, he would in all probability, with superior numbers in his favour, have gained a victory, though the results would not have been anything like so crushing. Herein lies the value of skill. To the student of war a mere victory unattended by the display of marked skill in its attainment is unattractive and means little. It is to him of merely transitory interest, but let that victory have been achieved by inferior, equal, or even superior forces by means of the skilful calculations and dispositions of the victorious commander, then it at once rivets his attention and demands the closest study. Hence arises the necessity for a discriminating and critical examination of historical examples. Some of the most decisive battles of the world, that have unquestionably had the most profound and far-reaching political results, are barren of tactical lessons. Zama was to Hannibal what Waterloo was to Napoleon. From neither of these two great decisive battles will the student of progressive tactics extract anything approaching that measure of skill which the reputations of the chief participants would lead him

to expect. Scipio and Wellington owed their victories, it must be admitted, to a chain of incidents in which skillful generalship can hardly with justice be held to find a prominent place. Each of these great soldiers in his own time was instrumental in ending the brilliant career of the most commanding military genius of his age. In either case the doom of the vanquished, struggling against fate, was already sealed by circumstances beyond control. Treachery and cowardice had sapped the resources of the one, and disease had impaired the energy and dulled the intellect of the other. Mondovi and Ulm, on the contrary, are of inferior political importance but of surpassing interest and deeply instructive from the point of view especially of progressive and comparative tactics.

At Bautzen, again, where the opposing forces were more equal in strength, the Allies being if anything superior in cavalry, Napoleon applied his concentric order of attack on a large scale with equal success. His flank attack from Hoyerswerda with 60,000 men under Ney was a brilliant conception and well executed. It was deserving of a greater measure of success than it actually attained owing to that most unfortunate misunderstanding of an order which has been the subject of so much controversy. To this day it remains a standard warning to every commander to exercise the most thoughtful consideration when about to issue an order to a subordinate to execute a major tactical movement with a detached force. He must carefully weigh in his mind whether he is to impose on that subordinate an uncompromising exactitude or give him a free initiative. In either case it has come to be recognized as of the most vital importance that in all such situations the commander of such a detached force should concurrently be made fully acquainted with the intentions of his chief and the general dispositions of his forces. Without this it is obviously impossible for him to grasp the true bearings of the situation, and to know how to act in an unforeseen crisis. The pencilled order written and despatched by Napoleon from Keina directed his marshal to be at Preititz by 11 o'clock on the morning of the 21st May. Ney, when the message was delivered to him, had already occupied and passed that village an hour earlier. He thereupon immediately arrested the advance of his troops instead of pushing on to Purschwitz so as to place himself astride the enemy's line of retreat, and notifying his action to head-quarters. It has been asserted that Ney was perfectly justified in the course he adopted in view of the strict insistence on the exact execution of his orders imposed by Napoleon on his generals. Yet it is difficult to avoid the reflection that on this occasion he might have exercised his judgment to better purpose. His defeat of Barclay and the very appreciable confusion into which his presence on their flank had thrown Blücher's troops, added to the general situation of the opposing armies which he could not fail to observe from the heights of Preititz or from the Windmühlen Berg, should have indicated to him very clearly the supreme and decisive nature of the undertaking upon which his chief had embarked him. His movement from

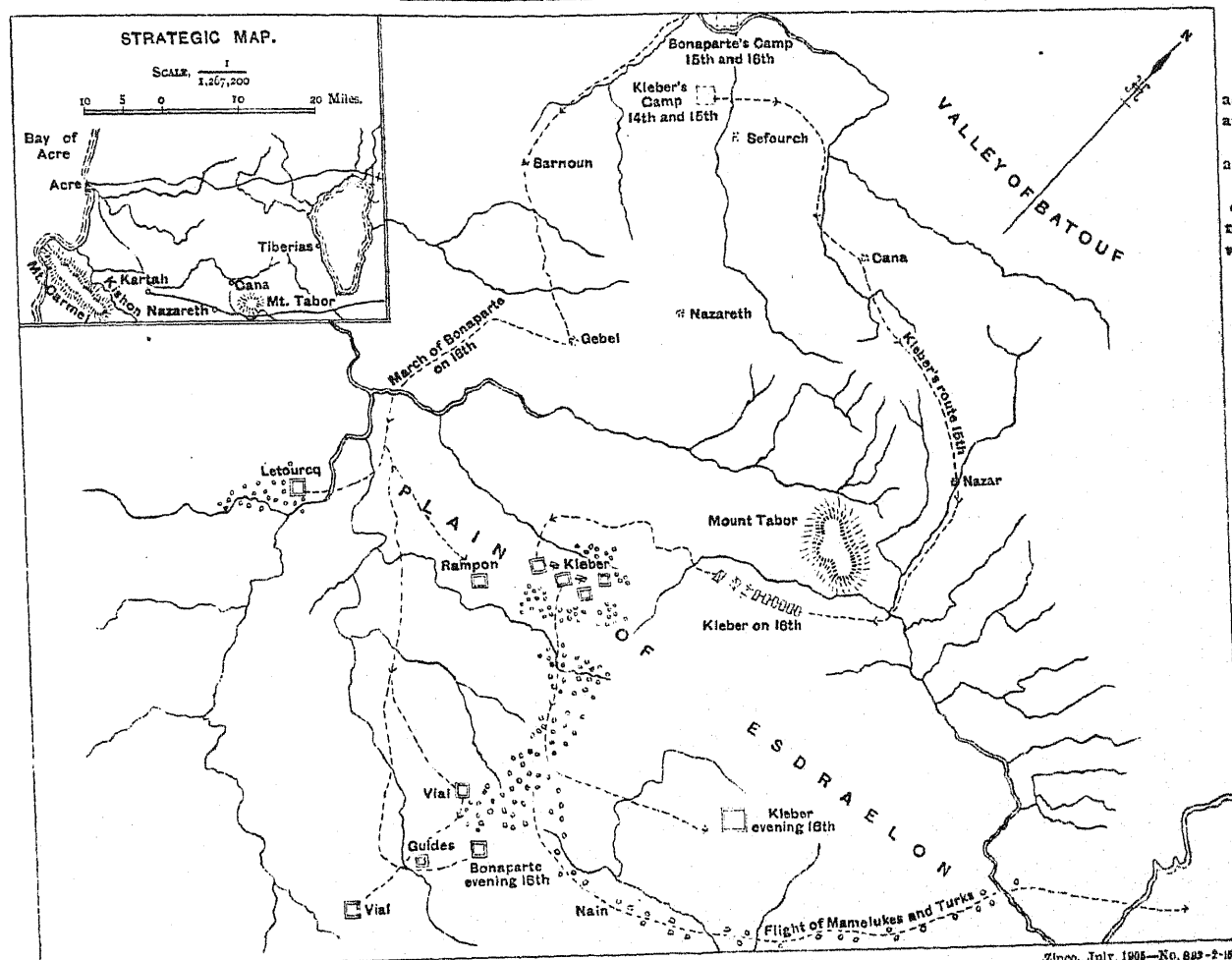


PLAN
OF
THE BATTLE OF MOUNT TABOR.

16th April, 1799.

SCALE, $\frac{1}{253,440}$

1 0 1 2 3 4 5 6 7 8 9 10 Miles.



Explanatory.

Bonaparte is laying siege to Acre.
Kleber is detached to observe the two approaches to Acre from the West passed the Northern and Southern extremity of the Lake of Tiberias.
An Army of 16,000 Mamelukes and Turks advances to relief of Acre.
Leaving portions of Lanne's and Reynier's Divisions to continue the siege, Napoleon marches to meet the enemy and defeats him at Mount Tabor with about 6,000 men.

Hoyerswerda and the direction of his march, if for no other reason, should have clearly revealed this to him. The fact is, Ney, "the bravest of the brave," ever foremost in a hundred fights, the matchless leader in a "tight corner," seems to have been nothing but a fiery and impulsive leader of men, splendid in the performance of a clearly indicated task, the more desperate and dangerous the better, but lacking the mental capacity to initiate it. He would appear to have been incapable either of intuitively grasping, much less of planning, great tactical problems, or of differentiating between minor and major movements on the battlefield. His dispositions at Dennewitz and the incident of the wandering corps between Ligny and Quatre Bras tend to support this view. Napoleon bitterly accused Ney of stupidity, and went so far as to regret his having raised him to the rank of Marshal of France, a point which Lord Roseberry dwells on in his "Napoleon: Last Phase." What a blighting indictment to be wrung from such a quarter pronounced against one of the most daring and devoted followers of a lifetime!

Historical incidents such as these cannot fail to afford food for reflection. Were one asked what in one's belief was the most important outcome of the South African War from a military standpoint and as immediately affecting the British army, one would perhaps be disposed to hazard the opinion that it was the widespread, one might even say national, recognition of a serious defect in our system of military education. It was perceived that there was every necessity for the infusion of a high standard of scientific knowledge of their profession into all ranks of officers. Nothing is more clearly observable than this in the insistent demands for a radical reform of the system of military training and education which had been in vogue practically unchanged since the days of the Crimean War. Immense strides in this direction have already very recently been made. It will be years before the results of these reforms are observable. We are yet almost too near the days of the purchase system. We have not yet shaken off certain traditional prejudices and ideals peculiar to our army and traceable directly to that antecedent system. That it should have been possible for an officer to rise to the rank of colonel or general with no other qualification than the pecuniary ability to purchase each successive step over the heads of less fortunate but perhaps more deserving men is almost unthinkable nowadays. There could under such circumstances have been no possible inducement direct or indirect for any officer to improve himself by study. Wellington, as is well known, complained frequently that a very large proportion of his officers were barely able to sign their names. That such a system worked fairly well in its day, or that it produced many soldiers of sterling worth, can hardly be accepted as an argument in favour either of its intrinsic excellence or of the desirability of its continuance. Its evils were obviously so glaring that it had to be swept away, but not so the traditions which had grown up around that system. The ideal of military capacity, for instance, formed in those days still

lingers. It has been and is still observable in the general and apparently rooted prejudice against "book learning" and the theoretical acquirement of the higher branches of the profession. The value of practical experience in war has always been highly valued. But experience thus gained by a man is necessarily limited both quantitatively and qualitatively. He must perforce supplement it with the study of the experience of others. In other words, military experience in its highest form consists of that which is personally acquired in the field added to that which is laboriously gleaned from the pages of history. The principles of the science of war are not the inventions of to-day, but the fruits of international historical experience. Like all scientific theories, they are subject to experiment and trial before acceptance: like them, too, subject to variation, fluctuation, and improvement. With perhaps the sole exception of such men as Parmenio, Craterus, Ptolemy, Hephaestion, Meleager, Cœnus and others of the Alexandrian galaxy of subordinate commanders, history does not show us a body of officers that had gone through the amount of hard fighting experienced by Ney, Soult, Davoust, Victor, Junot, Massena, and others of Napoleon's marshals. This experience was spread over a period of twenty years and was gained under the most varied conditions. Yet it is a remarkable fact that without exception they one and all failed to justify the trust imposed in them when in independent command and left in a great measure to their own resources and initiative, and that one of them, by no means the least famous, we find charged with stupidity. Their chief, on the other hand, is a standing example for all time of the result of the fruits of study applied in the field. Why then should it be still possible for so delusive an idea to linger in our midst that theoretical knowledge of the science of war is of little value, and that a commander has but to go into action to be suddenly inspired with correct principles and true methods?

Easy as it may seem to analyse and place a characteristic stamp on Napoleon's method of offensive tactics, the exact opposite is the case when attempting to formulate the principles which governed his defensive tactics. We should expect naturally to find that they were likewise based on concentricity of movement, that is to say, in respect of the masses retained in reserve for purposes of counter-attack. But we find this is not so, for he retained his reserves in rear of his centre, thereby conforming to the principles of the parallel order of battle. As a matter of fact, the occasions on which he suffered an enemy to snatch from him the tactical initiative are extremely rare. His concession of it to Weyrother and Buxhowden at Austerlitz was due, not to a sense of moral inferiority, but was rather a dexterous resort to artifice. Our search narrows down to the events of 1813, notably the battles of Dresden and Leipsic, when he was compelled to assume the tactical defensive, though it was never passive. At all three battles his plan was to break the enemy's centre, with this difference, that at Austerlitz he was guided in this

course by the known certainty of his opponent's predilection for Frederic's flank march, so that the strength and direction of the blow delivered by Soult on the heights of Pratzen was calculated to give the highest results. At Dresden and particularly at Leipsic the frontal counterattacks launched against a strong enviroing force were quite of a different character, and can only be regarded as the acts of desperation rather than of skill. To break through the centre of an enemy's line of battle is obviously the quickest way to reach his line of retreat and to ensure the maximum of demoralization. Nothing is more difficult of realization. The centre bears much the same relation in point of invulnerability to an army as a whole that a citadel does to a fortress. The centre, moreover, is ordinarily the most invulnerable part of a line of battle by reason particularly of the presence of reserves in rear. To assail it necessitates a frontal attack, which itself is liable to be taken in flank by enfilade. There are earthworks and other artificial difficulties to be overcome. At Blenheim and at Austerlitz exceptional opportunities were offered for a superior force to be hurled with every prospect of success against a weak centre or into a gap. Again, at the battle of Diamond Hill Lord Roberts broke Botha's centre because the latter had attenuated it to a dangerous degree by sending all his reserves from that point to meet movements directed against his flanks. The stopping or retarding effect of the most modern weapons of war is acknowledged, but there is a limit to that power beyond which numbers must be supplemented.

Viewing the tactical art across the intervening century separating us from the period I have been considering, it must be conceded that 'grand tactics' has not developed, if at all, to any appreciable degree beyond the stage at which Napoleon left it. On the other hand, tactical formations and the manner of employing the three arms within the fire zone has gradually altered very considerably indeed. This change is hardly perceptible in the first half of the nineteenth century, but in the second half it is extremely marked. It is due to the phenomenally rapid increase in the range, accuracy, and rate of discharge of firearms and cannon conjointly with an improvement in the character and ballistic properties of explosives. Rifled cannon and muskets first came into use in the middle of the last century. At Custoza the Italian rifled muzzle-loading guns attained a range of about 2,500 yards and the rifled musket an effective range of 450 yards. The outbreak of the Austro-Prussian war found the troops of the Dual Monarchy still armed with rifled muzzle-loading cannon and muskets similar to those of the Italians and having effective ranges approximating to those attained by their weapons at Custoza. The Prussians, on the contrary, had equipped their infantry with a breech-loading rifle known as the needle-gun, a term originally used to describe the striker of the breech block. This weapon had an effective range of 650 yards. As regards the artillery, only two-fifths of the entire number of their batteries that took the field, consisting of 4, 6, 8 and 12-pounder guns, had been

rifled, the remainder being still unconverted smooth bores. All were muzzle-loaders. The Austrian artillery, consisting of 4 and 8-pounder pieces, were all rifled.

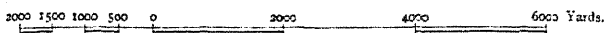
Four years later, in the Franco-German war, the Prussian army, in common with the other troops of the newly confederated German Empire, retained the needle-gun which had proved so successful in the previous war. But the muzzle-loading cannon had been discarded and replaced with the new 12-pounder breech-loading guns. Thus the system initiated by Gustavus and long retained by German armies of having several varieties of light field artillery was abolished and the entire field artillery was standardised to one uniform pattern. Ever since then the principle of having one uniform pattern has been recognized and adopted by all other armies. It is based on the idea of having a field gun capable of firing the heaviest projectile possible compatible with such strength and lightness in structure as will not diminish its mobility across country. The new German gun fired common shell and shrapnel with percussion fuzes as against the time fuzes used by the French gunners. The German batteries in this war systematically came into action at a range of about 3,200 yards, advancing to closer ranges in support of their infantry, whose needle-gun did not admit of their opening fire until within 650 yards of the enemy. The French infantry, on the other hand, were armed with the chassepot, also a breech-loader, but having a smaller bore and far superior to the German rifle in range. The former advantage enabled the French soldier to go into action with a larger supply of cartridges on his person. As regards the latter advantage the effects were seen in a startling manner at St. Privat when the Prussian Guards lost a third of their numbers at from 1,500 to 600 yards of the French position, that is, practically before a single shot could be fired with the needle-gun in reply. However, the French artillery, consisting of bronze pieces of the La Hitte pattern, was inferior and was entirely outclassed in range, precision, and weight of metal discharge in a given time. These guns had an effective range of about 3,000 yards, but the time fuse used was so faulty in construction that it could only serve for two ranges, 1,500 and 3,000 metres.

It now remains to consider the results of these successive inventions and the extent to which the breech-loader with its increased range and accuracy can be held to have revolutionised the tactical art viewed in its dual aspect. One naturally turns with interest to examine the brief Austro-Prussian campaign of 1866 culminating in the battle of Sadowa or Koniggratz. In the Franco-German war the infantry of both and the artillery of one of the belligerents brought the breech-loader into play. But in this war the breech-loader, constituting a new element in warfare, made its first appearance. Its real interest though lies not so much in the superiority it established for itself over the rifled muzzle-loader, a point already conceded before actual test in the field, but it lay in the modifications in tactical formations suggested to troops using it

PLAN OF THE BATTLE OF KONIGGRATZ.

3rd July, 1866.

SCALE, $\frac{1}{86,400}$



Austrian Army, under command of Benedek, I., II., III., IV., VI., VIII., X., and Saxon Corps, five Cavalry Divisions, 700 guns, total about 206,000 men.

Prussian Army under command of King of Prussia, Chief of Staff, Moltke.

1st Army, II. Corps, and 5th, 6th, 7th and 8th Divisions, } Under command of Prince
1 C.D., 50 batteries Elbe Army (Herwarth) 14th, 15th, } Fred. Charles,
16th Divisions, 2 C.D. 24 batteries.

2nd Army, I., V., VI., and Gds. Corps, Cavalry Division, 56 batteries, under the Crown Prince.

A. Austrian position, Saxons on left supported by VIII. Corps, next in order to right X., III., IV., and II. Corps. Reserve I. and VI. Corps in rear of centre.

B. Frontal attack of 1st Army.

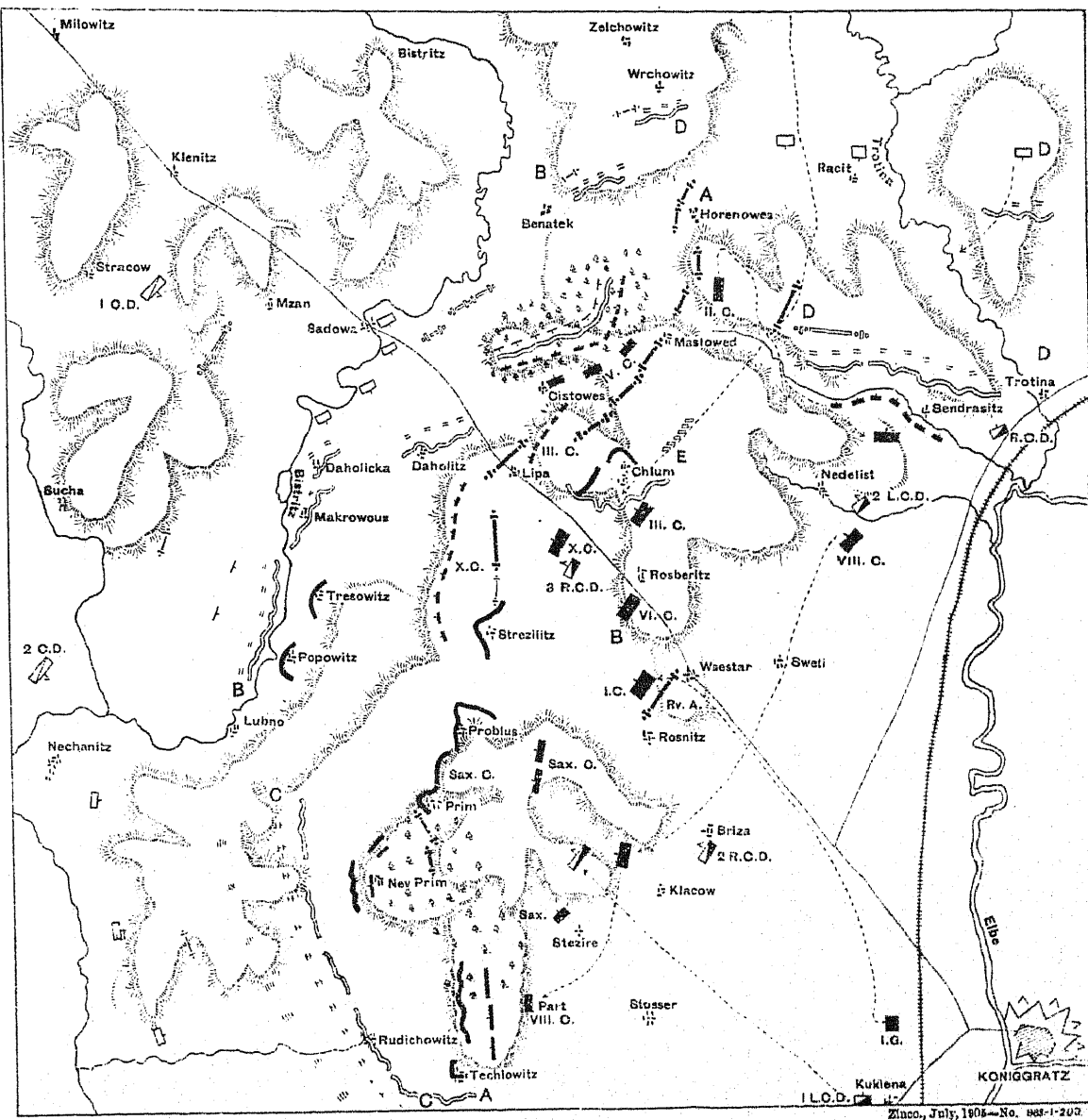
C. Enveloping attack by Army of the Elbe under Herwarth.

D. Line of advance of the 2nd Army.

E. Guard Corps finds Horenowes hill unoccupied advances and seizes Chlum and repulses an attack made by the VI. Austrian Corps.

Austrians

Prussians



Zinco, July, 1906—No. 888-1-202

and imposed on those having to face it. These modifications and the extent to which they may be safely adopted then, as ever since, formed the subject of hot dispute between the advocates of cohesion on the one hand and those of dispersion on the other. The experience of the South African war has been the means of resuscitating the controversy once more. Ever since the days of Gustavus there has never been a single reform having for its aim the reduction of the depth of the cavalry or infantry file, or a lessening of the cohesive rigidity of formed bodies of troops in action, that has not met with a storm of disapproval and solemn head-shakings from the majority of soldiers. In a sense this attitude is only natural. Not only does it rest on custom and tradition but on human nature itself. Any lessening of the power of resisting shock, the application of which is often sudden and unforeseen, has always inspired soldiers of all nations and of all ages with a sense of insecurity. This feeling, which the admitted resisting power of the magazine rifle has not allayed, is born of the primordial antagonism and rivalry between shock and fire tactics in battle. In this connection the advent of the breech-loader produced a decided element of uncertainty. It necessitated giving men more lateral space for the free use of the rifle. At the same time the difficulties of command and control became prominent. Prompt adoption of suitable formations, when extended to meet shock, was felt not to be easy. From remotest ages of antiquity organised troops of the line had generally speaking fought always in the upright or standing position in closed ranks. It was and is the only position pre-eminently adapted to shock tactics for a charge or a rush. Light troops hitherto from the very nature of their destructive duties were enabled to utilise a variety of positions in action according to circumstances. But the breech-loader was a sudden dissolvent of all hitherto known tactical formations. It first enabled the Prussian soldier to load and fire in a prone position without exposing himself and offering a very much smaller target to the enemy. The characteristics of light infantry were transferred to the entire infantry of an army. Skirmishers instead of merely being used for preparing and covering the advance of troops of the line and then making way for them, now formed the actual line of battle itself. They had to be fed and maintained in the front line by supports and reserves. The battle of Koniggratz marks the disappearance of the muzzle-loader, and with it, generally speaking, went the upright position for the soldier in action. It also marks the disappearance of the *raison d'être* of light infantry. Since then the old distinctive characteristics of light and heavy infantry, consistently maintained by all organised armies since the days of Cyrus the Great, have ceased really to exist. The functions of light infantry have since become common to the entire infantry of the line. All now require the same training. In the South African war light infantry were brigaded together like all other infantry battalions. To this day the armies of Europe without

exception preserve the old distinctive titles of rifles, light infantry, sharpshooters, and so forth; but these only convey a traditional, not a real significance. Skirmishing and marksmanship are no longer the exclusive prerogatives of a few selected corps, but constitute the supreme test in the training of every soldier armed with a rifle.

In considering the campaign leading up to the battle of Koniggratz we need, I think, only confine attention to the theatre of operations on the Bohemian frontier (see Strategico-tactical map attached). As the entire plan of campaign in this as in the next war was elaborated and conducted by the Prussian chief of the staff, we may regard him as the virtual commander-in-chief; his royal master being credited with no greater share in their active execution beyond giving his acquiescence to Moltke's conceptions and acting as a buffer between him and the royal but subordinate commanders of armies. This arrangement worked very well on the whole, and no doubt was eminently suited to the peculiar conditions of German militarism. We might therefore be somewhat disposed to imagine that you may even place a Soubise, a Melas or a Bazaine at the head of an army provided you prop him up with a Gneisenau or a Moltke as chief of the staff and all will go well. Let us fall into no such error. It is a dangerous military policy. The present war in the east is an object-lesson in this respect. The Japanese have with unerring selection placed the best brains at the head of the army and navy. A year of war has not disclosed any signs of incompetence even amongst their subordinate commanders.

The Prussian strategical plan of operations was simply the assumption of the initiative, the invasion of Bohemia, a concentration at Jicin, and then waiting on events. The preliminary concentration at Torgau, Gorlitz and Neisse on the 15th June was effected by means of the railways. These points were separated by intervals of from 100 to 125 miles. By the 22nd June one of the three masses was moved from Torgau to Dresden, and finally amalgamated with the first army at Gorlitz. The strategic advance was commenced on the 22nd, and the defiles of the Bohemian frontier were negotiated unopposed on the 25th. There are two points in this movement deserving of notice. Moltke's conception was based on Napoleon's method with this profound difference that he omitted to cover the movements of his masses with a continuous screen of cavalry. He neither organised a cavalry corps nor utilised the cavalry divisions. No attempt was made on the part of commanders of masses even locally to rectify, to the best of their powers, their dangerous omission. It will be seen by following the movements on the map that the cavalry divisions throughout the strategical and tactical phases of operations were consistently kept in rear. The advantages of concentric movement of masses are great, especially, as in this instance, when Moltke had all the benefits of the electric telegraph which Napoleon never possessed, but even then the risk of the isolation and destruction of one of those masses is by no means absent, and

proper measures for protection, intercommunication and co-operation are imperative. Moreover, half the advantages of the offensive are lost for lack of information of the enemy's movements. The danger is intensified if the lines of advance lead through the defiles of a mountain range deficient in lateral communications as Wurmser and Alvinzky learnt to their cost in Italy. In this instance the situation demanded a cavalry screen with an initial frontage of Dresden-Neisse and at least three or four days' march in advance of the masses it covered. Even after crossing the frontier no attempt was made to throw forward the cavalry divisions and to gain touch with each other and the enemy. Then, again, it is difficult to see from what point of view Jicsin can be regarded as a strategic objective. The old adage, separate to feed, concentrate to fight, has lost much of the seventeenth century freebooting meaning attached to it. But even if this was the guiding principle there were no grounds for supposing the enemy would be found ready to fight at Jicsin. Presumably the Austrian army in the field was the real strategic objective; if so, no measures were taken to locate it and the concentration at Jicsin was premature. Under all circumstances the concentration of an army in proportion to its size is attended with a loss of mobility and with great difficulties in connection with supplies of all kinds. A premature concentration without an object only accentuates loss of offensive power. By this means the advantages of the strategic concentricity of movement must be tactically lost to a great extent if the enemy were found not to be in the vicinity of the point of concentration. As a matter of fact, the invasion of Bohemia might, under the circumstances, have been effected in one mass with far greater ease and infinitely less risk by the route taken by the first army.

Benedek, on the other hand, lost all chance of assuming the strategic offensive by want of proper equipment for his troops. In a word, he was unprepared and lost several valuable days. Five of his seven corps were in Moravia in the middle of June. His intelligence department served him badly. Nothing certain is known of the plans he formed. The bulk of his army was in the vicinity of Brunn. This would seem to indicate some intention on his part to break into Silesia, hence the presence of the second Prussian army in the neighbourhood of Neisse and Glatz. His unpreparedness gave Moltke the initiative, and he had then to conform to the Prussian movements by a rapid march into Bohemia. The Prussian official account of the war gives the Austrian commander-in-chief credit for an intention to seize the interior lines between their own two armies by a concentration on the line Josephstadt-Koniginhof; then to hold the defiles of the Iser and Elbe with weak detachments and throw himself either on the Crown Prince or on Prince Frederick Charles. This is more an expression of opinion than a statement of fact. There is no evidence that this actually was Benedek's plan. Indeed, it is somewhat discounted by the assertion that the Austrian general was ignorant of the presence,

THE EVOLUTION OF MODERN TACTICS

strength, and movements of the second Prussian army. On the contrary, if such were really his intention he appears to have failed utterly to rise to the occasion, and the lessons of Rivoli and Bassano, Castiglioni and Lonato were completely lost on him. Did he hurl forward his cavalry masses (see map) to screen and protect his movements and to deny to the enemy all sources of information? Did he rapidly reinforce Clam Gallas and order him to *hold* the first Prussian army, disputing every inch of ground without committing himself to a decisive engagement with a superior enemy? Did he turn fiercely a superior force on one or other of the disconnected and unprotected corps of the second Prussian army nearest him, debouching from the wooded mountains? The reply to all these questions is in the negative, and the acts of omission are the neglect to carry out the established principles of war.

From the 26th to the evening of the 29th Benedek practically had the strategico-tactical game in his hands. His orders to Clam Gallas were contradictory and pusillanimous, and he gave that general no inkling from first to last of his own intentions. The situation seemed to indicate Arnan as his strategic point of concentration to give him the advantages of interior lines. Even his cavalry never reached that point. The battle of Trautenau required his personal presence. There the first Prussian corps was repulsed by the tenth Austrian corps. This battle, at such a vital point, should have been something worse than a repulse, had Benedek brought up the fourth corps instead of ordering it to counter-march that day.

Success at this important point gave him the initiative, and the critical situation of the second army was fully realized at the Prussian headquarter staff. After Trautenau it was open to Benedek to destroy the Prussian guard corps by holding it with the eighth corps and attacking its right flank with the fourth and tenth combined, meanwhile holding the fifth Prussian with his sixth at Nachod. If the Prussian guard and fifth corps had effected a junction he could have attacked them by the combined and rapid movements of the fourth, sixth, eighth and tenth corps with at least three cavalry divisions opposed to none. The result could hardly be doubted. Next, by a rapid countermarch to Arnan, leaving a corps to watch the second Prussian army, he should have brought a preponderance of strength to bear on the left flank of the first Prussian army. His previous successes would have had a retarding effect on the movements of that army, especially if the third corps had, as it ought, meanwhile joined Clam Gallas. But the situation demanded the active and ceaseless employment of cavalry, above all celerity of movement, and combination with preponderance of strength at the decisive tactical point, all under the active control of the Austrian general. Whereas he systematically committed his generals to isolated actions in which they invariably found themselves either inferior or equal, never superior, in strength to an enemy armed with the breech-loader. Consequently he allowed his forces to be crushed in detail.

On the 30th June the Austrian commander-in-chief perceived the impracticability of preventing the junction of the Prussian and his own precarious position owing to the defeat of Clam Gallas at Jicin. At midnight he set all his corps in motion to concentrate between the Bistritz and the Elbe in the quadrilateral Koniggratz, Lubno, Sadowa, Trotina. Even at this phase of the operations both commanders retained their cavalry masses in rear of their respective armies. During the next two days the Prussians completely lost touch with the enemy. As it transpired, two great armies aggregating little short of half a million combatants were within four and a half miles of one another and were oblivious of the fact. The earliest intimation of the near presence of the enemy in force was communicated to Moltke by the commander of an infantry detachment. Again after the battle of Koniggratz the Prussian commander lost all traces of the disorganised Austrian army. The eventual orders for the attack were issued when further confirmation was received of the enemy holding the line of the Bistritz in strength. The first army, including Herwarth's army of the Elbe, was directed to attack him frontally whilst the second army was ordered to bear down and attack him on his right flank.

The tactical feature of the battle on the Prussian side, speaking generally, was a complete failure in carrying out the principle of co-operation of the three arms. Like all the previous engagements, the action was commenced, continued, and ended by the infantry. The advanced guards rushed prematurely into the fight, drawing the main bodies after them, without a proper reconnaissance of the enemy's positions. The infantry went into action in company and half battalion columns covered by an extended firing line which was continually fed and strengthened by the supports and local reserves. The large masses of reserve artillery, separately organised and kept too far in rear of the infantry masses, came up too late into action. Consequently there was no preparatory artillery fire. There was also a complete lack of that mutually supporting fire which the infantry had a right to expect and which was the essence of the Napoleonic principle of massing great batteries to prepare the way for an infantry attack, as, for instance, the massing of Denot's Sixty guns to prepare and to support the attack of the Imperial Guards on Rahna at the battle of Lutzen. The infantry tactical formations were good and suitable to circumstances, but they were due more to the initiative of regimental officers than to previous peace training. As regards the tactics of the defence, the general impression left on the mind (see plan of the battle) is the clumping together of dense masses of troops composed of entire army corps in a much too restricted area, indicating a serious disregard of the effects of the breech-loader experienced in the previous actions. Having in view the incidents that occurred since the 26th June, it remains a mystery why Benedek neglected his right flank. Moreover, he seems to have been influenced by a desire to hurl masses against the thin Prussian firing lines. The tragedy of Chlum

sounded the death knell of this system of tactics which half a century earlier had been invariably adopted by the French army. Over and over again when opposed to the English line, purely shock tactics had recoiled broken before fire effect and shock combined. How did it fare when pitted against a more deadly and concentrated fire? It is sufficient to remember that the sixth Austrian corps, 20,000 strong, in dense column formation assailed Chlum then held by a few battalions of Prussian Guards in extended order. In twenty minutes the whole mass recoiled hopelessly shattered and broken under the withering fire of the needle-gun, losing fifty per cent of its strength in that short space of time.

Two or three considerations have influenced me in selecting this campaign for brief review. In the first place our War Office authorities for the last twenty-five or thirty years have prescribed this war as the anterior limit of the scope of historical research deemed necessary for an acquirement of the principles of scientific warfare. This applies not only to the Staff College, I believe, but also to the other military colleges. Then, again, special interest attaches to the Austro-Prussian war as it marks the commencement of an entirely new phase in the aspect of warfare by reason of the advent of the breech-loader, the adoption of the prone position by the soldier in action, and certain other modifications in tactical formations thereby necessitated. Further, it will enable the reader to judge for himself the standard of tactical skill displayed by the parties involved in the contest. I would ask him to compare their actions with the principles of grand tactics already established. This is all the more necessary in view of the unquestioned concession of superiority in scientific warfare accorded by us ever since to the Germans by an almost slavish adulation of their military methods. It would be difficult to find in modern history a similar example of such complete and utter disregard of the established principles of war. At the same time it must be acknowledged that the shortcomings of this campaign were perceived by none so quickly as the Germans themselves. In their next war they employed their cavalry corps both in the strategical and tactical phases for the legitimate purposes of acquiring information, affording protection, offering resistance, and maintaining touch. Their artillery arm, in the short interval between the two wars, was entirely re-equipped, reorganised and proportionately distributed amongst the various divisions and army corps. It was assigned a place on the line of march not far in rear of the head of the unit to which it belonged in order to come more readily and earlier into action. Its first endeavour was to silence the enemy's guns. Next it followed closely in support of the infantry advance. Fire was intelligently controlled and directed on specific objectives, such as woods, villages, hills, entrenchments, etc., preparatory to an assault by infantry. As the Chassepot outranged the needle-gun, this mutually supporting artillery fire was all the more necessary. Because the action of artillery in the Franco-German war was so prominent and because by contrast with its employment

in the previous war it proved so effective, it was at once asserted by many writers that in battles of the future that arm was to prove the most potent and deciding factor. I have indicated a period in history when a similar claim was made on behalf of cavalry. But the incontrovertible principle established at Breitenfeld and confirmed under the most modern conditions at Mukden holds good that battles are won mainly by infantry and entirely by the unceasing co-operation of all arms skillfully directed. The infantry in the Franco-German war worked in extended formation, the Germans adhering to the system of company and half battalion columns and the French in rather larger columns covered by firing lines. There was the same tendency on the part of the German advanced guard commanders to bring on premature engagements before thorough reconnaissance of the enemy's position. Only on exceptional occasions were dispositions for an attack made after mature consideration of the tactical situation. As a rule, the subordinate commanders, imbued with the traditional idea of marching to the sound of the cannon, moved forward only to find themselves involved in a frontal attack. Brought to a standstill, it was next found necessary, in order to dislodge the enemy, gradually to feel for his flanks and turn them. Hence arose the German method of the enveloping order of battle.

As for the last quarter of a century we have educated ourselves in a belief in the excellence of their interpretation of grand tactics, it would not be out of place to glance at the general method of its working and to then compare it with the concentric order of battle. To begin with, what is the German system of tactical procedure? Briefly stated it is this: Touch with the enemy to be obtained by the independent cavalry screen. Its primary duty is to defeat the enemy's cavalry, drive it back on its main body, and expose the enemy's position if he has taken one up. The reconnaissance of that position begins. It continues when the advanced guard arrives. The cavalry vedettes are relieved by infantry scouts. The cavalry moves off to the flanks still seeking information of the enemy's main position and that of his reserves. Next the commander of the army joins his advanced guard to make a personal reconnaissance. Meantime the entire main body concentrates and awaits orders at the appointed rendezvous. The commander of the force comes to a decision and makes his dispositions for the attack. He provides a reinforcement for his advanced guard, which then maintains a holding attack. He details an inferior force to make a feint against one of the enemy's flanks whilst he tells off a superior force to make an enveloping and decisive attack on the other flank, retaining for himself a general reserve. All attacks to be preceded by artillery preparatory fire.

In order to carry out their allotted task it is clear that the troops detailed for the flank attacks will have to move on divergent or eccentric lines from a common starting point or rendezvous. If their respective movements are to partake of the nature of a surprise they must circle round on arcs, the radii of which shall represent

distances far beyond the limits of telescopic vision directed from the enemy's captive balloons. Even then these movements really constitute flank marches in the presence of an enemy. They are based on Frederic's system of tactics, and are therefore characteristically Prussian. Like it also, the modern Prussian method requires the practically contiguous concentration of all the units of a force, be they divisions, army corps or armies, before accepting battle. On the other hand, the concentric order favours dispersion of masses up to the last moment and their simultaneous concentration on the battlefield itself with a preponderance of strength on the decisive flank. The enveloping order of attack such as that at Gravelotte betrays itself by its gradually unfolding character, the other is sudden and simultaneous, making no betrayal of predominant strength at either flank until too late for the enemy to benefit by the discovery. The electric telegraph and the marconigraph open out possibilities for the concentric order of battle undreamt of before by facilitating co-operation. A study of progressive tactics reveals the existence of these two rival systems of tactics. I have called attention to a similar state of affairs existing a century and a half ago, and we know how an issue was decided by events. Bearing that in mind the supreme question is, in which direction are we to expect a further development of the art? Will it advance on concentric or on enveloping lines?

Whilst the principles governing offensive action in the tactical field have been developing during the last two hundred years, the tactics of the defence has remained more or less stationary during that period. It is in fact still in the stage of the parallel order of battle. If it is to develop higher it must assume more of the characteristics of the offensive. Up to the present greater reliance has been placed on the powers of resistance than on the value of assuming the initiative. This was the case with the Austrians at Koniggratz, and the same is observable with the defence of Liaoyang and Mukden by the Russians. The principle of concentricity is highly applicable to defensive tactics on the basis that counterattack is the soul of defence. In practice the normal defensive method consists in taking up a position for the occupation of which three quarters of the entire force are used up and the other quarter is retained as a reserve in, generally speaking, a central position in rear. Such natural advantages as the position may afford are still further strengthened by artificial means. In this way a maximum of resisting power is ensured with a minimum of offensive mobility. If the enemy makes a purely frontal attack on such a position well and good, but that is the least likely thing to happen. Should he envelop either one or the other or both flanks the small general reserve is inadequate and any counter-attack it may make must be frontal, and therefore certain to fail against superiority of fire and numbers. What seems to be required is a complete reversal of this method of distribution. Whether a defending force consists of four brigades or four armies, not more

than one quarter of it should be utilised to occupy a defensive position, and the remaining three quarters should be retained for purposes of counterattack, which again should not be local or sporadic but decisive. This strong general reserve should be kept at a considerable distance from and on the flanks of the defensive position. It is certain that whether a defensive position is 9 miles in extent, as at Koniggratz, or 90 miles, as at Mukden, it can be turned, therefore unnecessary extension of frontage is rather a source of weakness than otherwise. The troops detailed for the occupation of the position should be regarded relatively as the counterpart to the holding attack.

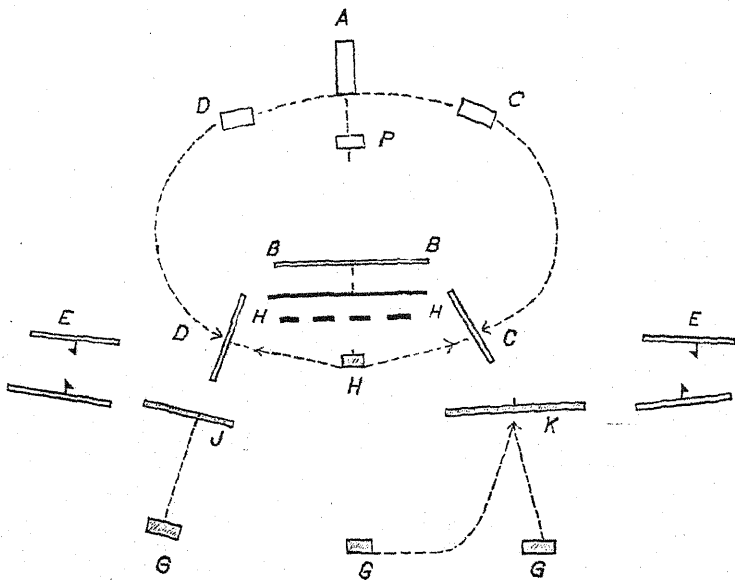
It has been proved lately that positions strengthened even by works of a semi-permanent nature and defended by the most modern weapons of war are not by any means invulnerable. Still, it may be accepted that the stopping or delaying power of modern guns and rifles has been confirmed. This and the greatly increased frontage of armies in action accounts for battles lasting days and days. The holding defence therefore would need no greater strength in numbers than the holding attack. On the contrary, it could do with considerably less in proportion to the natural and artificial strength of the position it occupied. The holding defence could be still further strengthened by local reserves being composed largely of mobile troops so as to reinforce a hard-pressed point in the quickest possible manner—a lesson the Boers first taught us on the Tugela. When the attack has fully developed itself and there is no longer a doubt where the decisive attack is being made, then, and not till then, would be the moment for the defence to seize the initiative, and to launch its counterattack against the exposed flanks of the decisive attack and the feint. Perhaps the accompanying illustration may make my meaning clearer. The principles on which the counterattack is made on my hypothesis are precisely those of the attack. This is the only conceivable method by which grand tactics could be applied to the defence, and the only means that occur to me by which a superiority of strength could be brought to bear on a weak and decisive point. It would afford an opportunity for an effectual display of combination, surprise, co-operation and simultaneity.

The one great outcome of the two German wars in Central Europe was a clear recognition of the importance of the fire zone. Now, what is meant by this term? It is literally nothing more than the *reach* of an army, and the characteristics of this reach in addition to range are volume and accuracy of fire. Any shortcomings in these respects could not be rectified after an outbreak of war, and it was perceived that they would carry with them consequences that were of vital importance. Since then, cost what it will, it has been the business of every Government to see that its army is equipped with guns and firearms no whit inferior in range, accuracy, and rate of discharge to those of any possible enemy. As a result of this competition we see the frequent and costly rearmaments that have to be resorted to in all armies. So far magazine

rifles, Q.-F. field artillery, and long-range guns are the highest products of mechanical skill applied to the weapons of war. Their combined effects have been to double the fire zone of thirty years ago and to more than double the volume of fire in a given time. With these constant changes it can never be said that all armies are on precisely equal terms. As a matter of fact they are not. But when our new 18 $\frac{1}{2}$ -pounder Q.-F. field guns have been issued it is believed that our army will then command a fire zone which is unsurpassed in range and destructiveness. Assuming this to be the highest standard attained, let us analyse its bearing on future warfare. The zone, to begin with, may be said to consist of three well defined belts. The outer one of from 7,000 to 10,000 yards is liable to be searched by the projectiles of heavy artillery; the middle belt ranging from 3,000 to 7,000 yards is swept by Q.-F. field artillery in combination with the heavy pieces; and the inner belt of 3,000 yards will be subject to a tornado of every description of fire, including that poured in by magazine rifles and machine guns. It stands to reason that much of this fire zone is beyond the limits of human vision, but it is within telescopic vision, and it is certain that effective fire controlled and directed from captive balloons can be brought to bear on objectives invisible from elsewhere. Now, if to the range and to the gradually increasing intensity and accuracy of this fire is added the difficulty experienced in locating its sources due to the use of smokeless powder we have the main factors for determining the manner in which troops of all arms should act when entering this fire zone.

This enormous power of modern weapons displayed in our last war led many to the belief that battles of the future would be won by fire effect alone and that the days of shock were numbered. The present war in the East has abundantly proved this generalisation to have been erroneous. We are reminded of the fact that shock tactics is a power inherent in an army armed even with the most deadly and destructive weapons of war. What has been found to be the truth is that the ability to apply shock is greatly restricted if not suspended whilst the fire zone is being crossed. When entering an enemy's fire zone the masses of an army must break up into smaller and smaller bodies, and finally dissolve into a succession of lines of skirmishers. These lines must move forward until a lodgment has been gained well within decisive range of the enemy's position. It cannot be assumed that fire effect alone will then always compel that enemy to evacuate his position. If he is equally firm and resolved, there must come a crucial moment when resort must be had to shock tactics. Not long ago the belief was current that we were within an ace of having the bayonet abolished in our army and that consideration of the peculiar conditions of savage warfare, for which we must always be prepared, alone prevented the idea from being carried into effect. It must be remembered the Boers had no disciplined infantry, nor were they equipped with shock weapons, therefore their systematic

SKETCH ILLUSTRATING ATTACK AND DEFENCE.



- | | | |
|---------------------------------------------------|--------------------------------------------|---------------------|
| A The attacking army. | B The holding attack. | C The feint. |
| D The decisive attack. | E Attacking army mounted troops. | |
| F General reserve. | G The defending army. | |
| H The holding defence. | J Counterattack on decisive attack. | |
| K Decisive counterattack at weakest point. | L Defending army mounted troops. | |

abandonment of positions at the critical moment of battle proved, not that shock tactics had ceased to exist, but rather that they recognised the potency of shock, and under the circumstances wisely avoided it. In 1866 the Austrians placed great reliance on the bayonet, but the error they committed lay in attempting to cross the fire zone in close and vulnerable formation in order to appeal to cold steel. Similarly, from all we can gather the Russians have erred in precisely the same direction, whereas the Japanese have invariably succeeded in crossing the fire zone in suitable formation and have then had constant recourse to the bayonet. Changes of infantry formation within the fire zone based on considerations of visibility and vulnerability apply with equal if not greater force to the other and more conspicuous arms. The advance of alternate lines of guns such as was effected by the Germans in the Franco-German war will in future be found to be impracticable or at all events accompanied by heavy sacrifices within a range of 3,000 yards. Artillery at close ranges can only hope to take up fresh positions under cover of darkness. The results of the present war tend to show that the intervals between our guns in action are not only inadequate but inconsistent with the supreme necessity for obtaining cover wherever found even for single guns. A battery may have occasion to take up a front of 600 yards in action but each gun should be under the control of the battery commander by telephone. Then, again, the purely shock functions of cavalry must be considered as suspended until the enemy has been dislodged from his position and is suffering from the consequent demoralisation, but even then its action will have to be in close co-operation with artillery and infantry. The opportunities for cavalry shock action will occur at the initial and final stages of a battle.

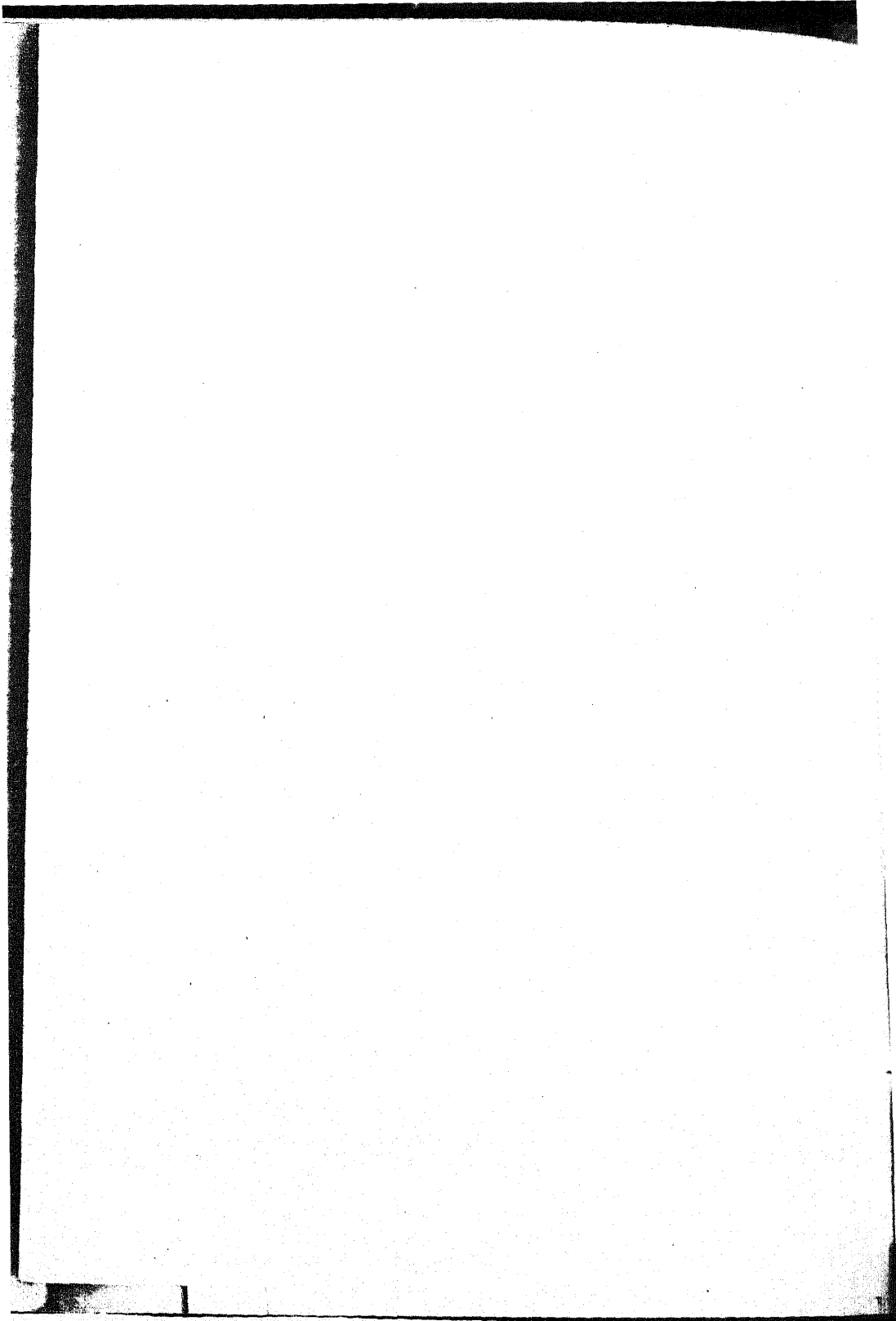
There is one other marked feature of the modern battlefield, and that is the enormous tactical area over which it is fought. This was foreshadowed in South Africa, where a force of from fifty to sixty thousand men occupied a front of from 20 to 30 miles. At Liaoyang the front was 45 miles, but at Mukden, where the respective armies are computed to have been from 300,000 to 360,000 men, the length of the Russian defensive front was 90 miles, and as both their flanks were enveloped it may be assumed that the front of the Japanese army was quite one-third as much more, or 120 miles. Of course when the battle began the outposts of the opposing forces were confronting one another on the Shaho. But let us see what this would mean if two such armies covered by their respective screens came into contact. It is clear that on such an extended front as they would cover not one but several mounted units would divide the distance in sections. A contest would begin for the possession of certain topographical points affording tactical advantages for further operations, the object of each screen being to drive the other back in order to locate the main army in rear. It is almost certain that a mounted screen composed of the three arms would eventually win all these points from a screen composed on

the old lines of cavalry and artillery only. Continental soldiers do not concede this, and so mounted infantry remains a feature peculiar to our army. A cavalryman armed with a rifle is not the same thing as an infantry man armed with a bayonet when it comes to assaulting or holding positions. We have got in to the fashion of talking of cavalry tactics, artillery tactics, and infantry tactics. This distinction is nothing but a mere abstraction. There is but the one art, and that is the tactics of the combined arms. The tactics of a body of mounted troops composed of the three arms is subject to the same established principles as is that of a mixed force in which footsoldiers bulk largely. The only difference is one of mobility. Mounted infantry when dismounted for action should act precisely as ordinary infantry. The duty of protecting their horses or other means of conveyance should devolve on cavalry, and they should be left in rear of the artillery position. At present our mounted infantry cling too much to their horses, with the result that they are regarded as both inferior cavalry and infantry. In seeking for the substance we seem to have caught at the shadow. There is no reason why mobile infantry in action, intelligently handled, should not command that measure of respect from cavalry which is accorded to infantry of the line. The requirements of the future, having in view the nature and extent of the fire zone, would seem to point to the eventual replacement of purely cavalry divisions with mobile divisions of all arms. The proportion of mounted troops to infantry proper should be not less than 1 to 4, that is, an army of 300,000 men would require 75,000 mounted troops, in which again the proportion of cavalry to mobile infantry should be 1 to 3.

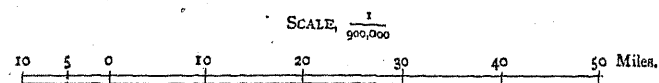
Then, again, there is the problem of the difficulties of reconnaissance and the transmission of information to and orders from the central authority as well as the great need for quick and reliable means of communication with the masses of an army in rear of its screen. Obviously personal reconnaissance of an enemy's position now by a commander is not only futile but amounts almost to a physical impossibility. The reconnaissance by the mounted troops, as they cannot venture across the enemy's fire zone beyond a certain limit, must be to a great extent inadequate. Spies must now as hitherto play a considerable part. But resort must be had more largely to vertical observations, and as these observations are of little value unless made and recorded by trained minds, staff officers must be extensively and almost exclusively used to reconnoitre from captive balloons. No divisional staff of mounted or other troops should be without this equipment. The present system of transmitting information from the front must undergo considerable improvement. Each section of the mounted screen, be it composed of one, two, or even three divisions, should be in direct communication with headquarters by means of the electric telegraph or the marconigraph. No division of an army should be without an installation for wireless telegraphy any more than we

should expect to see a modern battleship without it. A pressing need is the organisation of a corps of highly trained electricians, whose main duty in peace would be to devise means to apply the latest scientific discoveries to the requirements of an army in the field, and in war to be responsible for the working of these appliances. History proves that success in war is due to initiative, and initiative is dependent on timely and superior information. But with troops spread over a vast tactical area the most scientific and quickest method of transmitting information and orders is of supreme importance. A general-in-chief cannot attempt to be everywhere. Kuropatkin is in all likelihood the last general who has attempted such a feat. Nor can he call his generals round him like Napoleon did his marshals. His staff must collect and collate all available information. When the enemy's position and the exact disposition of his reserves is known then he must launch his masses to the attack and literally switch them on automatically. He must fight his battle on the map and follow every movement on it. The country on that map should be as easily read by him as though he were gazing at its exact counterpart in nature. No trouble or expense must be spared to have maps of a theatre of operations topographically correct. Above all he must keep away from the turmoil of battle and not run the risk of losing the calm general in the heated combatant.

Lord Curzon has recently remarked that the present struggle in the East is the supreme vindication of preparedness for war. We are now fully alive to this necessity. Our army is being equipped with the most modern and up-to-date weapons and more attention is being paid to the practical training of the soldier and the scientific education of the officer. But for the latter the crux of his education should lie in tactical knowledge. The higher the average of proficiency in this subject is raised, the more we undoubtedly add to the strength and efficiency of the army.



STRATEGICO-TACTICAL MAP.



GOLD MEDAL PRIZE ESSAY, 1905.

A Comparative Study of the Organisation, Training, and Duties of the Staff in the Armies of France, Germany, and England, with Proposals Deduced therefrom for the Organisation and Training of the Staff suited to Imperial Needs.

BY MAJOR G. R. COCKERILL, ROYAL WARWICKSHIRE REGT.

"I have gathered a posie of other men's flowers, and nothing but the thread that binds them is mine own." —MONTAIGNE.

INTRODUCTION.

AN efficient Staff is an essential part of the modern fighting machine. The increased size of the armies of to-day, the greater rapidity of concentration, the complexity of armament and equipment throw a strain upon a commander heavier than any one man can bear. He requires assistants, in other words a Staff. It is the function of the Staff in war to relieve their General of all the details of command, so that, when he has decided the general principles on which the supply of the Army and the safety of its communications shall be secured, he may devote his whole attention to those strategical and tactical combinations which, skilfully directed, ensure great victories.

This being the function of the Staff in war, and peace being for a soldier but a period of preparation for war, the duties of the Staff must, broadly speaking, be identical in all modern armies. It is in the distribution of these duties and the importance attached to each of them that diversity of practice arises. Whatever organisation be adopted, the object is to foresee, consider, and provide for every important military service, without duplicating work or obscuring responsibility. In every State, however, the political organisation must affect the military, and, on this account, an ideal system for one State is more than likely to possess grave defects if applied, without modifications, to another.

THE MILITARY NEEDS OF THE BRITISH EMPIRE.

Before attempting to evolve an organisation of the Staff suited to Imperial needs, some inquiry into those needs from the point of view of war is an essential preliminary. Exigencies of space forbid the discussion of all possible theatres in which British troops may be called upon to vindicate British honour or interests. Since, however, it is necessary to have a clear idea of the number and purpose of the forces for which Staffs must be provided, and

since no authoritative statement exists on the subject, I am constrained to postulate these two factors, and, in so doing, propose to outline briefly the considerations on which my estimate is based.

The British Empire consists of various territories, far apart geographically but united politically by ties of race, sentiment, or common interests. Of these territories the most important are the United Kingdom, Australia and New Zealand, South Africa, Canada, and India. With two exceptions none of these can be attacked by any first-class Power except by sea. Canada is the first exception. From the Pacific to the Atlantic her southern frontier is conterminous with the northern frontier of the United States of America. The United States, therefore, would be in the same position towards Canada as a Continental Power towards its immediate neighbours but for the fact that neither country menaces the other with large armaments. India is the other exception. The northern frontier of Afghanistan, which we are pledged to protect from aggression, marches with those of Russia's Central Asian Empire from Persia to the Pamirs, and by means of two existing lines of railway Russia would be enabled to place and maintain a force of from 500,000 to 600,000 men upon this frontier.

Putting, therefore, the doubtful case of Canada aside, and making no allowance for such factors as our European position, the double line of railway to the Indian frontier, and the extent of our Colonial Empire, our military needs are comparable to those of Japan. It cannot be said that Japanese resources in men and *matériel* are too large for the task which she has in hand, yet we find that she maintains in peace a force of 150,000 men with a war strength of 500,000 men, and a supernumerary reserve of partly-trained men numbering another half million. The troops of all arms at war strength are complete with the necessary guns, supply and ammunition columns, transport, field hospitals, and horse depôts.

Taking these figures as a basis, and adding 250,000 men for the permanent garrisons of strategical points, including India, and 100,000 men as an allowance for the two first factors mentioned above, I arrive at the conclusion that we require a peace strength of about 430,000 men and a war strength of 850,000 men, with the necessary complement of guns, transport, &c. This estimate includes the Indian Army of 230,000 men, but not the defence forces of self-governing Colonies. We must, therefore, be prepared to keep an army of 200,000 men at Home in peace, which shall be capable of expansion at least to 600,000 men in war, and, in order to replace casualties, there should be a reserve of partly-trained men, 600,000 in number, all available for foreign service.*

As we already maintain at Home and in India a force which, including the Reserves, Militia, and Volunteers, is greater than that

*Since this was written, Lord Roberts, in an article in the January number of the "Nineteenth Century," observes: "We are now, as regards India, in the same position as a Continental nation, and may be called upon at any moment to put a very large army in the field."

required, it is obvious that the problem is one of organisation and adaptation rather than of creation. It can be solved partly by insisting that a military training should be part of our educational system; but such a course would provide us merely with valuable raw material for subsidiary reserves. As a German witness of the South African War, speaking of the Boers, observes: "This war teaches one thing with convincing clearness: the incapacity of all Militia armies, *i.e.*, a population called up without a thorough peace training, without military organisation and without Staffs, to fight long sustained battles, on which the very existence of a State may depend."* We must therefore look to another source than the Militia and Volunteers, as at present organised, to provide trained men in sufficient numbers. That we must have them is certain. A vigorous offensive is the soul of successful defence, and the history of nations proves that sea power unsupported by land power gives but ephemeral greatness. To secure the national safety, therefore, we must devote our efforts towards obtaining a fully-trained and fully-equipped force, available for service abroad in the event of war.

Until the Navy has obtained command of the sea, this Imperial Service Army, being necessarily detained at Home, will be more than sufficient for Home defence. When the command of the sea has been obtained, no Home garrisons will be required larger than is necessary to give security against raids.

The logical conclusion is that our fighting forces should be organised in three distinct parts for three separate purposes: a local Militia, lightly equipped, and numbering less than 100,000 men, for defence against raids; a fully-trained Imperial Service Militia, capable of rapid expansion and available for foreign service in the event of war; and a Regular Army for foreign service in peace and war. The latter must maintain permanent garrisons for India and other strategical points strong enough for their defence until reinforced, and provide a nucleus at Home which will furnish drafts and reliefs for the garrisons abroad, and form the first reinforcements to leave our shores in the event of war. The Imperial Service Militia, which will remain at Home in peace, must serve at least one year with the colours and five years in the reserves.

The interval between the outbreak of war and the destruction of the enemy's fleets will be usefully employed in improving the quality of these reserves, and training a subsidiary reserve.

The same considerations apply with equal force to the troops maintained by Colonial Governments, which, including Militia, Volunteers and Reserves, now number over 100,000 men. During the last quarter of a century the Colonies have conclusively proved their desire to assist the Empire to which they and we are proud to belong; the time may come, I hope, when they will be prepared to make a portion of their forces permanently available for Imperial

* "Lessons of the Boer War." A lecture by Major Balck, of the Great General Staff.

Service—perhaps in peace, certainly in times of emergency—trusting for local defence against raids to a small force of Militia, whose efficiency can be improved on the outbreak of war. If we set the example, we shall, I think, have little difficulty in persuading the rest of the Empire of its wisdom. It will only then remain to arm all Imperial Service troops with the same weapons, and to organise and train them on similar lines. It is to an Imperial General Staff educated in an Imperial Staff College and filling Imperial appointments on reciprocal terms that I look for the co-ordination of their organisation and training.

One other point must be mentioned. The maintenance of an effective Navy is vital to our national existence, and, as has been stated, the creation of an Imperial Service Army is essential to a successful defence of our national interests. The resources of the Empire, however, though vast, are not inexhaustible, and we must feel assured of our existence before we can contemplate the defence of our interests. We require, therefore, some machinery for harmonising the needs of the sister services and for weighing their relative importance. We must, in the words of the War Office (Reconstitution) Committee, provide for "the scientific study of Imperial resources, the co-ordination of the ever-varying factors upon which Imperial rule rests, the calculation of forces required, and the broad plans necessary to sustain the burden of Empire."*

These, then, are our Imperial needs; these, the objects toward which the organisation and training of the Staff must be directed.

I propose to deal with the subject in three parts: the higher organisation of the Staff; the Staff with the troops; and the training of the Staff.

Attention will first be directed to the broad principles on which the higher Staffs of the French, German and English Armies are organised in peace with a view to their preparation for war, and, by an examination of the basis of these principles, an attempt will be made to deduce an organisation of the higher Staff suited to Imperial needs. The organisation of the Staff with the troops will be similarly treated, and the training of the Staff, once the purpose of its existence is clear, will prove a simpler problem.

THE HIGHER ORGANISATION OF THE STAFF.

The higher organisation of the Staff may be considered under three heads—

- (a) The co-ordination of the naval and military needs of the Empire.
- (b) The command, direction and administration of the Army in peace and war.
- (c) The organisation of the War Office.

*War Office (Reconstitution) Committee's letter to Mr. Balfour, dated January 11th, 1904.

(a) *The Co-ordination of the Naval and Military Needs of the Empire.*

In France the nominal head of the Army and Navy is the President of the Republic. The whole administration of the Army centres in the Minister of War, and of the Navy in the Minister of Marine, who are directly responsible to Parliament. There is no special machinery for the co-ordination of the needs of the two services, other than that provided by the Cabinet. The German system, too, gives us little assistance. The composition of the German Empire, which consists of 25 Federated States, has more resemblance to that of the British Empire, but its federation is more complete: there is an Imperial Parliament, to which each State sends representatives. Prussia, Württemberg, Saxony, and Bavaria have separate War Offices and War Ministers, and the King of Bavaria is Commander-in-Chief of the Bavarian forces in peace; in war, however, the German Emperor is Commander-in-Chief of all the German military forces. Assisted by a Naval Commander-in-chief, he is also the supreme head of the naval forces. He is, therefore, in a position to harmonise the needs of the sister services, and to co-ordinate the naval and military policy of the Empire. As in France, however, there appears to be no special machinery to assist him.

In Great Britain the King is head both of the Navy and Army, and the House of Commons fixes the establishments and sanctions by an annual vote the money required for their maintenance. The executive government is entrusted to a Cabinet, at the head of which is the Prime Minister for the time being, who is responsible to the Crown and country for the efficiency and sufficiency of the preparations for war. In the Cabinet the First Lord of the Admiralty is charged with the discipline and administration of the Navy; the Secretary of State for War with the control of the Army. The superintendence, direction and control of the Indian Army, however, is vested in the Governor-General of India in Council, who, again, submits all measures of Imperial interest, civil and military, to the Secretary of State for India in Council. There are also certain forces administered by the Colonial Office, and others by the Foreign Office.

The co-ordinating head of these departments is the Prime Minister, who is directly responsible for the national safety. He is assisted in the discharge of his onerous duties by a Committee of Imperial Defence, over which he presides. In the selection of the members he has absolute discretion.

With a view to obtaining from each of the departments of State and collecting for the use of the Committee the information required for a study of the many complex problems of Imperial Defence, there is a small department, consisting of a permanent secretary and junior officers representing the Navy, Army, and, it is hoped, in the future, India and the Colonies.

There is nothing in the French or German systems to suggest to us any improvement in our own. In the Defence Committee, with the Prime Minister as its President, and with a permanent secretariat as a guarantee for the continuity of its policy, we have an institution of incalculable value provided only that the members are qualified experts whose decisions carry sufficient authority. The Prime Minister has "perfect freedom of action in regard to the component parts" of the Defence Committee. Judging, however, from the past, in which a disregard for national security has proved common to all political parties, it would seem desirable to predetermine the constitution of the Committee. The Prime Minister must be its President if he is to be personally committed to its policy. The First Lord of the Admiralty, the Secretaries of State for War, India, and the Colonies, and the Chancellor of the Exchequer must be members. As it is a Committee of Defence, there must be naval and military members in equal proportions, and together not fewer than the civilian members. There should therefore be three members of each service. For reasons which it is hoped to justify later, the military members of the Committee of Imperial Defence should be the Inspector-General of the Forces, the Chief of the General Staff, and the Chief of the Administrative Department. The duties of the secretariat should be limited to the preparation of cases for submission to the Committee, anticipating its needs as far as possible. When information is required, it should be obtained from the department concerned, and any tendency to usurp the functions of the General Staff, naval or military, should be repressed. Except at its head, there is no need for senior officers in the secretariat, which should, however, consist of naval and military officers. It would be desirable to fill military vacancies by the selection of the best qualified officer from names submitted by the Chief of the General Staff, the Commander-in-Chief in India, and the Colonial Governments.

(b) *The Command, Direction, and Administration of the Army in Peace and War.*

In France, the command, direction, and administration of the Army in peace centres in the Minister for War, who may be a soldier or a civilian.

In regard to military policy he is assisted by the Superior War Council and the Chief of the General Staff; for inspection and command, by those members of the Council who are designated for high commands in the event of war and by the Generals of Division commanding army corps; and in administration, by the heads of the various departments of the War Office.

The Superior War Council is concerned with the consideration of all questions relating to the preparation of the Army for war. The Minister of War is President; the members are the Chief of the General Staff, the official "reporter," and 11 Generals of

Division, one of whom is Vice-President. The latter will probably be Commander-in-Chief of the forces in war, and in peace acts as Inspector of the corps nearest the eastern frontier. Certain of the other members will command armies. Those so designated receive warrants informing them of the corps of which their armies will be composed, and in peace their particular duty is to direct the manœuvres of these corps. They are thus brought in close touch in peace with the officers and men whom they will lead in war.

The Generals of Division, who are members of the Council, have extended powers. They are at the disposal of the War Minister for the purpose of making special strategical studies, undertaking special missions, and making unexpected inspections.

The Council meet at least once a month. Plans of concentration, the essential principles of mobilisation, all matters affecting the constitution of the Army and its employment, the creation or suppression of fortresses, the adoption of new weapons, etc., must by law be submitted to the Council, but any question may be referred to it at the discretion of the Minister of War. The final decision does not, however, rest with the Council, but with the Minister, who can over-ride its rulings. The country has thus a guarantee that grave questions touching its security are not decided without examination by the most competent military authorities. These authorities, it is to be observed, are not the heads of departments at the War Office, but the most distinguished generals of the day, destined for high command in war, and in direct touch with the troops in peace. Military policy is thus divorced in a sense from administration.

The general command and inspection of the troops is in the hands of the army corps commanders, and recent decrees have laid more and more emphasis on the principle that the proper inspector of the troops is their commander. Between the corps commanders and the Minister of War there is no intermediate authority in actual command, except during manœuvres, but the officers designated for the command of armies in war have a voice in the promotion of officers and all matters affecting the efficiency of the corps for war.

Thus in policy, command and inspection the ultimate power, subject to the control of the War Minister, rests in the hands of the generals who will command in war, and not in the War Office, which deals mainly with administration. Even in administration decentralisation is almost complete. The corps commanders are responsible for the supply of every requirement for which funds have been allotted; they must anticipate their wants and make them known to the Minister, and their responsibility ceases only when a demand has been refused. If the refusal involves inefficiency they can bring pressure on the Minister through the Army Inspectors, who as members of the War Council are deeply concerned in the efficiency of the Army for war. Should the Minister be persuaded of its necessity he would meet the demand, if necessary, by improved

methods of administration. The partial divorce of policy from administration is thus of great value.

The Chief of the General Staff is responsible for schemes of offence and defence, and has a voice in deciding all questions connected with organisation, instruction, mobilisation, and armament. Such questions are submitted to the War Council through his department. In time of war he will act as Chief of the General Staff to the Commander-in-Chief of the Forces, so that in peace he occupies a position somewhat resembling that which he will hold in war. He is subordinate to the Minister of War, but a decree, dated 6th May 1890, expressly declares that his department is not a section of the War Office, and must be considered as a separate institution, connecting the War Minister with the General who would be appointed as Commander-in-Chief in war.

In Germany, the Emperor is Commander-in-Chief—in peace practically, in war absolutely—of all the German forces. The command, inspection, direction, and administration of the Army, therefore, naturally centres in him. He fixes the effectives, and it is his special province to assure himself by inspection that every unit is prepared for war, and that there is uniformity in organisation and training. He is, in fact, the Inspector-General of the Forces, for even in Bavaria he has the right of inspection. In this important duty he has the assistance of a special Staff. The army corps are grouped into five armies, each under an Army Inspector of the highest rank, who will, it is believed, command them in war. There are also four Inspectors-General (of Cavalry, Foot Artillery, Engineers, Pioneers, and Fortresses; and Military Education), whose special function is to secure uniformity of training, etc., in the different arms of the service, and who act as technical heads of their respective services, and as technical advisers to the Emperor, the Corps Commanders, and the Minister of War.

As in France, command is decentralised, being vested in the corps commanders, who enjoy very large independent powers in command, finance, and administration, and who report direct to the Emperor through the Chief of the Military Cabinet. Decentralisation in Germany is complete; it is, in fact, the cardinal principle underlying their Army system.

As in France, too, military policy is divorced, in a sense, from administration. Under the Emperor, it is vested in the hands of the Chief of the General Staff, who, in peace, is entrusted with the consideration of plans of offence and defence, the preparation and training of the Army for war, and the study of the ever-varying facts on which military policy and military power are based. In war he assists the Emperor in the same capacity, being charged with the conduct of all operations of war.

The Minister of War is entrusted with the general and financial administration of the Army. He is in constant communication with the Chief of the General Staff, who must be consulted in regard to all questions affecting the training of the Army, its organisation and

mobilisation. Owing to the extensive powers delegated to corps commanders, both in administration and finance, the Minister of War escapes the burden of trivial details. He can, therefore, devote his whole attention to the improvement of administrative methods, and, being a permanent official, can elaborate a continuous and far-sighted administrative and financial policy.

It has been stated that the corps commanders report to the Emperor through the Chief of the Military Cabinet. It should be added that this official is the Emperor's military and confidential secretary. In addition to the reports of the corps commanders, he receives the reports of the Army and technical inspectors, issues Cabinet orders, and deals with all questions relating to the appointment, promotion, etc., of all except Staff Officers. The appointment and training of *all* Staff Officers are left to the Chief of the General Staff. The latter arrangement prevails, too, in France, but in that country the appointments, etc., of other officers are arranged by the heads of departments at the War Office.

It is now possible to enumerate the principles underlying the distribution of duties in the higher Staffs of France and Germany. They are—

(a) The definite relation between the inspection of the Army in peace and the command of the larger units in war.

(b) The intimate association of military policy with commands, and of the Chief of the General Staff with the Commander-in-Chief designate of the forces.

The above two principles (a) and (b) are more perfectly elaborated in Germany than in France.

(c) The divorce of policy from administration and finance, in the sense that the Chief of the General Staff must be consulted in all matters affecting organisation, training, mobilisation, and armament. This principle might appear to be better observed in France than in Germany, unless it could be inferred, as I think it may, that, in Germany, the opinion of the Chief of the General Staff carries great weight in all such matters. The preparatory work of mobilisation forms part of the duties of the General Staff, and in discussing the war formation of the German Army Bronsart von Schellendorff observes* : "It must be a matter of military organisation in time of peace to prepare, in the most effectual way possible, for the formation of the Army on a war footing, by providing sufficiently strong peace cadres, ensuring that the additional officers, employés, men, and horses required shall be forthcoming, and having ready for immediate use the necessary arms, ammunition, clothing, equipment, supplies, transport, etc., of every kind. It is only when such matters have been thoroughly attended to in peace time that mobilisation can take place without a hitch. . . . To achieve a still higher degree of perfection in all such matters is what officers of

* "The Duties of the General Staff," 3rd edition, p. 246.

the General Staff, specially entrusted with the preparatory work of mobilisation, must be constantly striving at." The duties above enumerated may be described as the higher peace organisation of the Army; and it is, I think, a safe inference that the Chief of the General Staff is permitted the final word in all such matters.

When the difference between the political organisation of France and Germany is considered, the coincidence of these fundamental principles in their military systems is striking. In France the head of the State is merely the nominal head of the Army; its effective head is the Minister for War. It has been stated that the Chief of the General Staff is independent of the other departments of the War Office. If these departments were grouped under one chief, subordinate to the War Minister, and if the latter were selected for approved military capacity, the system would be superior to the German system in the fact that the Commander-in-Chief would hold that position by right of merit, not by accident of birth; inferior to it in the fact that he would not wield the same power, or be so independent of political party. But the analogy would otherwise be complete. In each case there would be the supreme head of the Army, commanding in peace and in war, assisted by an Inspection Staff, a Chief of the General Staff, a Chief of the Administrative Staff, and Corps Commanders. Such a system would be almost ideal. In France, however, as in England, "the complete responsibility to Parliament and the country of the Secretary of State for War for the discipline as well as for the administration of the Army must be accepted as definitely established."* In England the Secretary of State for War must, unless the existing political machinery be modified, be selected on party grounds, not on account of military capacity. Either, then, the political machinery must be modified, or the system suggested above must be adapted to meet its requirements. The former expedient, though not impossible, is not a likely contingency. It has not been attempted in the recent reorganisation of the War Office. I propose, therefore, to examine the new system, with a view to discovering how far it approximates to the ideal.

The Secretary of State for War is a civilian, and is responsible to the Crown and to the country for the efficiency of the Army. As regards the executive command of the forces in Great Britain he is assisted by General Officers Commanding-in-Chief, selected for their fitness for command in the field, who command and administer in peace the forces quartered in seven clearly-defined territorial areas. These officers have lately been invested with increased financial and administrative powers, and it is intended to strengthen their authority still further. So far the new system is identical with the French and German systems. The inspection of the troops is entrusted to the Inspector-General of the Forces, whose sole function, however, is to report upon actual facts without

* See "Report of the Hartington Commission," Section 82.

pressing opinions upon policy. He has no administrative or executive functions, unless his duties in connection with the Selection Board can be so called. He reviews and reports to the Army Council* upon the "practical results of the policy of the Council within the financial limits laid down by the Cabinet," and is required to form a judgment on "the efficiency of officers and men, the handling of troops, the standard and system of training, the suitability of equipment, and generally all that affects the readiness of the forces for war."† He is not, so far as is publicly known, designated to be the Commander-in-Chief of the Army in war, and no provision whatever is made for the command of a unit larger than an army corps. If ever the time comes, therefore, to despatch more than 30,000 troops abroad these troops must inevitably be led by commanders who have no personal knowledge of officers or men.

The Inspector-General is assisted by Inspectors of Cavalry, Horse and Field Artillery, Garrison Artillery, Engineers and Equipment and Ordnance Stores, who report to him upon the efficiency of their respective arms, but like him are not apparently intended to command in war. I am, therefore, justified in saying that there is in our home system no definite relation between the inspection of the Army in peace and the command of units larger than an army corps in war.

That such a relation should exist is, I think, essential. In certain eventualities we may be compelled to concentrate on threatened points forces on a Continental scale. These forces must necessarily be organised in armies, each consisting of two or more army corps, and it is of paramount importance that the officers who will command them in war should be designated in peace, be given a recognised position in close touch with them, and have opportunities of directing them in manœuvre.

I propose, therefore, that at home and in India the Army should be organised in corps and independent divisions, and that these should be grouped into armies which should be inspected in

* The Army Council consists of the Secretary of State for War as President, four military members, and the civil and financial members, with the Permanent Under Secretary of State as secretary. The Council is responsible to the Crown, Parliament and country for the general efficiency of the military forces. The military members hold office for a period of four years, and then revert to other duties. They do not personally exercise military command. All decisions are taken and all executive orders issued in the name of the Council as a whole. Any member desiring to dissociate himself from responsibility for a decision from which he dissents, and which, in his opinion, contravenes a vital principle of policy, must resign his office.

Each member is further responsible for the administration of his own branch. The distribution of duties, in the broadest sense, is as follows:—

Secretary of State—responsible to the Crown and to Parliament.

1st Military Member—military policy operations, intelligence, and training.

2nd Military Member—interior economy and recruiting.

3rd Military Member—supply, transport, clothing, and remounts.

4th Military Member—fortresses and armaments.

Civil Member—civil business other than finance.

Finance Member—finance.

† "War Office (Reconstitution) Committee Report," Part III, Section 8.

peace, and directed in manœuvre, by the officers who will command them in war.

It is equally important that the officer who will hold the supreme command in war should be designated in peace. As Count Moltke wrote in a letter to Mr. Spencer Wilkinson * "If the Government will and can select the most qualified general for the post, that officer must also be given during peace the authority to influence the troops and to create an understanding between himself and the General Staff." If, then, the greatest soldier in the military service of the country be appointed Inspector-General of the Forces, he will have the necessary influence with the troops. "As troops are inspected, so will they be drilled"—and trained. If, as at present, he is also President of the Selection Board, his authority will be strengthened, and he will be in a position to gain valuable knowledge of the capabilities of senior officers. If, then, he be nominated as Commander-in-Chief designate in war, it will remain only to give him a voice in the military policy of the nation, and an opportunity of creating an understanding between himself and the General Staff.

In the reorganised War Office military policy is in the hands of the Army Council, which is charged also with the administration of the Army; command devolves on the Generals Commanding. The Inspector-General has no voice in creating policy; he is, indeed, expressly debarred from discussing it. The Generals Commanding have nothing to do with its creation; they exist to give effect to it. Policy, in fact, is divorced from command and wedded to administration. The effect of this arrangement must be that difficulties of execution will be met, not, as they should be, by improved methods of administration, but by modification of policy; and this effect is, in my opinion, deplorable.

The consideration of military policy, in the first instance, is a duty of the Chief of the General Staff. The Reconstitution Committee, in its proposed distribution of Staff duties, expressly allots to the first military member of the Army Council "military policy in all its branches." In France and Germany, matters affecting organisation, mobilisation, armament and training are referred to the Chief of the General Staff. In England, important questions relating to peace organisation are studied in the Adjutant-General's and Quartermaster-General's departments. Peace organisation is, in fact, specially allotted to the recruiting and organisation directorate of the Adjutant-General's department, while the use of railways in war is studied in the Quartermaster-General's department. Armament is the province of the Master-General of the Ordnance. No mention is made of consultation with the Chief of the General Staff where a decision would affect the Army's fitness for war. Broad questions of policy arising in any department are, it is true,

* "Brains of an Army," by Spencer Wilkinson; Preface to the 2nd edition, p. 11, 1895 edition.

submitted to the Army Council, in which the Chief of the General Staff shares with the other six members the right of expressing his opinion; but the country has no guarantee that the officer whose *role* is the art of war, and who will assist the Commander-in-Chief in directing the operations in war, has a controlling voice in all that affects the Army's efficiency for war; still less that the officer who will actually command in war has ever been consulted in the preparation of the plans of campaign.

To remove this anomaly, the Chief of the General Staff should be in fact, as he is in theory, charged with military policy in all its aspects, untrammelled by a Council of military and civilian administrators. He should be consulted in all questions of organisation, mobilisation and armament which affect the employment of the Army in war, and there should be free and frequent communication between his department and the administrative departments on all such matters. He should also be in close personal touch with the Commander-in-Chief designate.

My proposals are, therefore, that the greatest soldier in the country's service should be appointed Inspector-General of the Forces in peace and Commander-in-Chief designate, and that he should be assisted by Army Inspectors who will command armies in war; that it should be his duty to ascertain, by inspection, that every unit is ready for war, and that there is uniformity in organisation, command, armament and training; that there should be a Chief of the General Staff responsible for military policy generally, the preparation of plans of offence or defence, the collection of information concerning the facts on which military power is based, and the training of the Army for war; and that these two officers should be as intimately associated in peace as they would be in war, that is, that the Chief of the General Staff should be selected by the Inspector-General and submit for his approval all plans of offence and defence, and all measures directly affecting the employment of the Army in war. It is to be further understood that both these officers must be directly subordinate to the Secretary of State for War, the change suggested being designed to place at the latter's disposal on questions of military policy the advice of the two officers most concerned therewith rather than that of a Council, which should exist, if it exists at all, for the administration of the Army on sound business and financial principles.

The study of the War Office (Reconstitution) Committee's Report (Part I, Section II, para 8), on which the organisation of the Army Council is based, states clearly the faulty conditions which the Committee's scheme of reconstruction is designed to ameliorate, and the existence of which undoubtedly impaired the Army's efficiency. Two of these—the centralisation of a vast number of incongruous functions in the Commander-in-Chief, and the weakness and undue subordination of the branches concerned with preparations for a campaign and the collection of necessary

information—have been considered, and my proposals for removing them go even further than the Committee's. In making suggestions in regard to the remaining departments, I accept the Committee's dicta that the duties and responsibilities of the military heads should be clearly defined, that their relations to each other and to the Secretary of State should be effective, and that by an adequate system of decentralisation in administration the military heads should have leisure "for the consideration of questions of real importance," and "for exercising forethought and initiative." Recognising the brilliancy of the Committee's summary of existing evils, one is disappointed at their reticence in withholding their reasons for the constitution of the Army Council on the exact lines adopted. The terms of their reference, however, instructed them to base their proposals upon the system of higher administration which obtains in the Admiralty, and which, though never in recent times put to the supreme test, has "successfully met new demands as they have arisen," and "has retained the confidence of the Navy and the nation."

But a comparison of the Admiralty and new War Office systems * shows that the analogy between them, though close, is not perfect, while that between fleets on the high seas and armies in the field is misleading. A fleet can carry with it a greater quantity of supplies than can a field army, and the problem of its communications is less complex. A fleet in commission at sea is practically on active service, and gunnery, manoeuvres, and training can be practised without any special arrangements being made for the purpose. In so many points, indeed, is the analogy between the two services incomplete that one might be excused astonishment if an organisation best suited to the Navy were found readily adaptable to the needs of the Army. I suspect, moreover, that if one examined closely the interior economy of each department, the resemblance would be found still more elusive. What, for example, corresponds to the railway, remount, and veterinary services in the Junior Naval Lord's Department?

The essential principles of administration are decentralisation which should prevent trivial matters of routine from reaching the War Office, at the same time training officers in every grade to accept responsibility; and co-ordination at headquarters, to ensure that important questions are considered from every point of view.

The Army Council performs two functions: one advisory and co-ordinative, in its collective capacity, the other administrative, through its individual members. I have suggested that in its advisory capacity it is not the most perfect instrument, since military policy is outvoiced and outvoted by military administration. I have urged the independence of the Chief of the General Staff. If the remaining heads of departments report direct to the Secretary of State, we obtain a system analogous to that of France, in which

* See Table B, Part III, "War Office (Reconstitution) Committee's Report,"

there is no authority between the heads of the 12 departments and the Minister of War. This system would throw upon the Secretary of State the onus of co-ordinating the whole administrative business of the War Office, a task which no Secretary of State could perform efficiently in addition to his other duties. I prefer the German (and Japanese) system, where the various sections of the administration are grouped into departments, whose heads exist for control and initiative, and report to a Minister charged solely with administration.

These considerations induce me to make the further suggestion that the administrative and financial control of the Army should be entrusted to a military administrator of ability under the general direction of the Secretary of State. The responsibility for economical and efficient administration will then be undivided, while the balance between policy and administration on the one hand, and administration and finance on the other, will be better maintained.

To sum up, the Secretary of State for War should have the assistance of three high officials, all of whom should be soldiers. The Inspector-General of the Forces should assure himself of the efficiency of the Army for war, and have a voice in questions of high policy: in other respects, he should not be burdened with administrative or executive functions; the Chief of the General Staff should prepare the Army for war, and study all questions affecting its efficiency by the light of military science and from the point of view of war; and the Chief of the Administrative Department should control the administrative machinery from the point of view of economy, so far as it is compatible with efficiency. In war, the Inspector-General would become Commander-in-Chief,* the Chief of the General Staff would be attached in the same capacity to his Staff, and the administrator would remain at his post to supply the needs of the Army.

These three officials would fittingly represent the Army on the Committee of Imperial Defence.

(c) *The Organisation of the War Office.*

In Germany the Chief of the General Staff is independent of the War Minister; in France his department is not supposed to be a section of the War Office, but is subordinate to the War Minister in a way not differing from the other departments; in England his department forms one of the great divisions in which the War Office is organised. I propose, however, to consider the organisation of the General Staff at Army Headquarters by itself and then that of the remaining departments, taken collectively.

The General Staff at Headquarters.

Although, as has been stated, Prussia, Würtemberg, Saxony, and Bavaria have separate War Offices, yet the military system is

* Except, of course, in the event of the theatre of war being in India.

practically identical. The Staff of the Prussian and Württemberg armies is trained and selected by the Chief of the General Staff and the officers are interchangeable. Saxony has its own General Staff, but a few senior officers are generally attached to the Prussian General Staff, and a certain number are trained every year at the Prussian Staff College. Bavaria, too, maintains an independent General Staff, but two officers are always attached to the Prussian General Staff, and the Prussian system is closely followed. This co-ordination of system by an interchange of General Staff Officers is for us very suggestive and significant.

In Germany the department of the Chief of the General Staff at Headquarters is called the Great General Staff, to distinguish it from the General Staff with the army corps. It is organised into seventeen sections, which are supervised by chiefs of sections, and arranged in groups under chief quartermasters.

The most important points to note are the existence of a Railway section, dealing with all matters connected with the military use of railways, including the training of the Railway Brigade, and two Fortress sections, dealing with the strategical rôle of German fortresses. There are also three "Intelligence" sections under a chief quartermaster, whose duty consists in following attentively all important military events and improvements at home and abroad, all matters concerning the military organisation, reserves, armament and equipment of foreign armies, military geography, fortresses and communications of foreign countries, etc.

Other sections deal with plans of operations, strategical deployment, manœuvres, staff rides, military history, survey and maps, and the Staff College.

Appointment to the General Staff is made mainly from officers who have passed the War Academy (Staff College) with distinction; and the General Staff is entrusted with the supervision of the scientific training of the College, providing it with instructors very largely from its own *personnel*. This arrangement identifies the interests of the College with those of the General Staff, and guarantees a practical training for the duties of the Staff in war.

In France the Department of the Chief of the General Staff at Headquarters is divided into three branches, which may be called the military operations, the mobilisation and historical, and the geographical branches. The duties are practically identical with those of the Great General Staff in Germany. In France, however, the military operations branch includes a section which deals, not only with the strategical use of railways, but of all lines of communication and transport. A similar section, it may be observed, forms part of the Japanese General Staff. Another special feature of the French system is the existence of a section (1st Bureau) in the mobilisation and historical branch, dealing with the organisation, mobilisation, and distribution of the Army.

In England the Chief of the General Staff's Department is divided into three directorates: (1) Military operations; (2) Staff duties; and (3) Military training.

The Military Operations Directorate deals with plans of offence and defence (except home defence), the strategical distribution of the Army, "intelligence" and topographical information, including map-making. The General Staff Library is attached.

The Staff Duties Directorate is charged with the organisation, formation, and instruction of the General Staff, and controls the instruction at the Staff and Cadet Colleges. It includes a section for the study of military history.

The Military Training Directorate is divided into two sections, one of which is responsible for the war organisation of the Army, and for home defence, including the mobilisation, strategical concentration, and distribution of the troops in the United Kingdom; the other for manœuvres and the training of all arms.

The duties allotted to the Chief of the General Staff appear generally to meet Imperial requirements. Mobilisation and organisation, however, are subjects in regard to which there should be complete accord between the administrative departments and the Chief of the General Staff. They must be considered from the separate points of view of economy and efficiency for war. I think, therefore, that the section of the Chief of the General Staff's Department charged with war organisation should have an opportunity of discussing all such questions. A suggestion may also be offered as to the distribution of duties among the directorates. The Military Training Directorate occupies an anomalous position. One section deals with home defence, the other with war training. As regards the first section, the defence of naval bases and defended ports at home is a problem akin to the defence of naval bases and commercial ports abroad, yet the latter subject is allotted to the Directorate of Military Operations, which is precluded from the consideration of the establishments required for foreign service. The natural remedy for this anomaly lies in the amalgamation of this section with the Military Operations Directorate. The second section—Military Training—might then with advantage be transferred to the Directorate of Staff Duties, which already deals with the training of the Staff for war, and should be responsible for the training of all combatant troops. There should also be sections of the General Staff for the study of the strategical use of railways, the collection of intelligence regarding railways in all possible theatres of war, and questions affecting the organisation of the lines of communication.

The organisation which I would recommend is as follows:—

Military Operations Directorate.—(a) Military operations, plans of offence and defence, including home defence; (b) mobilisation, strategical distribution and concentration, including the use of railways and lines of communication; and (c) peace and war organisation and establishments.

Staff Duties and Training Directorate.—(a) Organisation, formation, and instruction of the General Staff; (b) military training, war games, staff rides and manœuvres; and (c) staff and cadet colleges and military examinations.

Intelligence Directorate.—(a) and (b) "Intelligence" (two sections); (c) topography and maps; and (d) library and military history.

Officers of the Indian and Colonial forces who are graduates of the Staff College should be eligible for employment under the Chief of the General Staff, and a certain proportion of the appointments in each directorate should be filled by such officers. I regard reciprocity in this respect between the home, Indian, and Colonial armies as most important, and consider that the General Staff should be in every sense Imperial.

The Chief of the General Staff should be responsible for the selection and administration of the entire Staff of the home Army, and should approve the regulations for admission, not only to the Imperial General Staff, but also to every branch of the Staff of the home and Indian armies. I feel convinced that otherwise it will prove impossible to secure the best men for the Imperial General Staff, and that a spirit of jealousy and rivalry, very detrimental to the interest of the service, will result. Heads of departments should, of course, be permitted to select their own Officers from among those qualified.

Administrative Staff at Headquarters.

The Administrative Staff at the French Army Headquarter consists of no less than 12 departments—(a) Cabinet of the Minister; (b) Control; (c) Legal Affairs and Military Justice; (d) Interior Service; (e) Infantry; (f) Cavalry; (g) Artillery; (h) Engineers; (i) Intendance; (j) Explosives; (k) Medical; and (l) Colonial Army.

These departments are co-equal. Each department administers its own votes, but any proposal for expenditure not provided for in the Budget must receive the previous approval of the Director of Control.

The Cabinet of the Minister consists of two bureaux, the first dealing with the registry of correspondence, and the second with general correspondence and the appointment, etc., of general officers.

The Control Department provides for the financial administration of the Army, frames estimates and audits accounts.

The Chief of the Interior Service deals with the *personnel*, *matériel* and archives of the War Office.

The Infantry, Cavalry, Artillery, Engineer and Medical Departments deal with the *personnel*, establishments, appointments and promotions of their respective services, schools of instruction and training, etc. In addition, the Infantry Department deals with the recruiting of the whole Army and with the reserves; the Cavalry

Department with the remount services; the Artillery Department with arsenals, magazines, and factories (except powder factories, which are under the Explosives Department), maintenance of stores, supply of arms and ammunition, etc.; and the Engineer Department with the construction of fortresses and barracks and military telegraphy.

The Intendance Department is a purely civil department entrusted with the supply of food, forage, fuel and light, the pay of the troops and the supply of clothing and furniture.

The other departments are self-explanatory.

Nearly all the departments have their counterpart in sections of the German War Office; but in Germany, although the War Minister is relieved of responsibility for the General Staff and for the appointment of general officers, it has been found expedient to group into four departments all but the remount and medical sections, which remain independent.

The Central Department deals with the interior organisation and administration of the War Office, Parliamentary business and archives.

The General War Department is concerned with the general finance and administration of the combatant troops. It contains separate sections for Infantry, Cavalry, Field and Foot Artillery, and Engineers, which consider such questions as armament, education, the provision of ranges, fortress construction, etc., as they affect their particular arm of the service. There is also an Army section which deals with peace and war organisation, the distribution of the Army, the lines of communications, recruiting, etc.

The Master of the Ordnance is, for administrative purposes, under this department, but, on all questions of *personnel*, is immediately subordinate to the Emperor. He has charge of all technical factories and arsenals, and is responsible for the supply of arms, ammunition and equipment to the troops.

The army Administration Department contains six sections—(1) finance; (2) supply; (3) clothing; (4) barracks and quarters; (5) training grounds; and (6) works section.

The Pension and Justice Department consists of three sections—(1) pensions and non-effective votes; (2) assistance (compassionate allowances for widows and orphans, invalid institutions, disciplinary establishments, etc.); and (3) justice (military chaplains, military law establishment, pardons and releases, etc.)

The remount and medical sections are self-explanatory.

In England, as in Germany, the administrative business of the Army is divided among departments, which, excluding the General Staff, are five in number—three military and two civilian. There is in addition a Central Department, which corresponds very closely to the German Central Department, and is under the control of the Secretary of the Army Council.

The Adjutant-General's Department consists of four directorates: (a) recruiting and organisation (peace organisation,

mobilisation, recruiting, discipline, and Army schools); (b) personal services (there are sections for special Cavalry, Artillery and Engineer questions, and a general section which deals with ceremonial, and the posting, leave, etc., of officers); (c) Army Medical Services; and (d) Auxiliary Forces.

The Quartermaster-General's Department includes finance and contract sections, and four directorates—(a) movements and quarterings (barrack services, movements, and the use of railways in war); (b) transport and remounts (also veterinary questions); (c) supplies and clothing (food, forage, fuel and light, officers' dress, and clothing and necessaries); and (d) equipment and ordnance stores.

The Department of the Master-General of the Ordnance comprises finance and contract sections and two directorates, to each of which a personal section is attached—(a) artillery (armament, ammunition, explosives, transport vehicles, etc.), and (b) fortifications and works (fortifications, new barrack services costing under £2,000, barrack maintenance, lands, ranges, and Royal Engineer stores).

The Civil Member's Department is entrusted with the construction of new barracks and hospitals costing over £2,000; with the administration of the Chaplain-General's Department, and eventually the non-effective votes.

The Department of the Finance Member is charged with financial criticism on estimates and advice to the heads of the spending departments and the Army Council. He is assisted by a Director of Army Finance.

The Secretary of the Army Council and War Office is responsible for the general control and discipline of the civil staff of the War Office and for appointments and promotions therein; the direct control of the Central Department; official communications with the King, other Departments of State and the Law Officers of the Crown; the preparation of actuarial and statistical returns of a general character, and communications with the Press. He keeps the records of the Army Council and signs all letters sent in its name.

The Central Department is divided into three sections—(1) regulations, committees, etc.; (2) parliamentary business, etc.; and (3) central registry.

It will be observed that the Adjutant-General's Department corresponds nearly to the German General War Department, and to the French Infantry, Cavalry, Artillery, Engineer and Medical Departments; while the Quartermaster-General's Department resembles less closely the German Army Administration Department, and the French Intendance Department. The third military department associates two subjects—armament and works—whose connection is very intimate, but which are dealt with in France and Germany respectively in the Artillery and Engineer Departments or Sections; and a third subject—barracks—which in France is assigned to the Engineer Department, and in Germany to the Army Administration Department.

I would propose to organise the Adjutant-General's Department (or Directorate, as I should prefer to call it) in three sections—(a) Infantry, Cavalry, Artillery, and Engineers; (b) Auxiliary Forces; and (c) General Services. The former should deal not only with *personnel* questions, but with all matters affecting their arm of the service, including establishments, reliefs, drafts, leave, exchanges, transfers, technical schools, embarkation orders to units, mobilisation and notification of appointments. The General Services Section should deal with recruiting, discipline and General Army schools.

I desire to emphasise the suggestion that the Administrative Departments should become directorates. Many of their most important duties have now been transferred to the General Staff, which is a new creation, and many have devolved upon the General Officers Commanding-in-Chief, in accordance with the principles of decentralisation lately inaugurated. The natural corollary is a proportionate reduction in their status, which is both essential to economy and consistent with efficiency.

As has been stated on page 3, I look to a reconstituted and fully-trained Militia and Militia Reserve to provide the troops required for Imperial service in time of war. I have therefore placed both Militia and Volunteers in one section in order that one officer may be responsible for welding them into a homogeneous force ready and fit for any emergency.

A question of some difficulty is the position of the Army Medical Service, Army Service Corps, and the Army Ordnance, Remount and Army Veterinary Departments. Broadly viewed, these are all lines of communication services, field sections of which are detached for duty with combatant troops. The Reconstitution Committee considered the proper position of the Medical Service to be under the Adjutant-General, "whose duties are specially connected with the person of the soldier," but with all deference I think that all the services enumerated above, together with the railway troops, should be under the directorate which deals primarily with the lines of communication—that is, the Quartermaster-General's. There should, therefore, be five sections of that directorate—(a) Movements and quarterings; (b) Transport, remounts and veterinary; (c) Supplies and clothing; (d) Equipment and ordnance stores; and (e) Medical services.

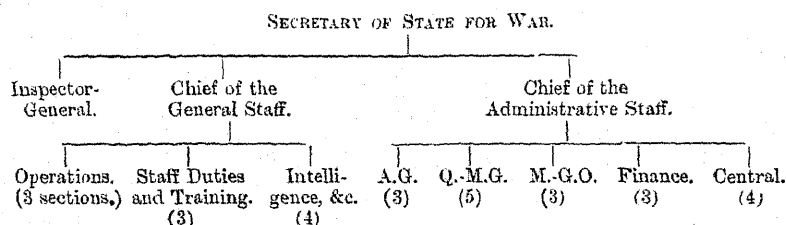
With a view to providing definite work for the Parliamentary Under Secretary of State, the Reconstitution Committee recommended that the newly-formed Barrack Construction Directorate should be transferred to his control, together with the Chaplain's Department and non-effective votes. The Master-General of the Ordnance is, however, responsible for new barrack services costing under £2,000, and all maintenance, and the administration of War Department lands. It would appear preferable, therefore, that a third section should be added to his directorate dealing with the construction and maintenance of barracks, store buildings, ranges, and the purchase and custody of lands. His directorate would then be

organised in three sections—(a) Artillery; (b) Fortifications; and (c) Buildings and lands.

Each of the above directorates—Adjutant-General's, Quarter-master-General's, and Master-General's of the Ordnance—should control its own votes; each should have a finance section attached for advice and assistance in the compilation of its estimates; and the two last should have contract sections for contract work.

The non-effective votes should be administered by the Director of Army Finance.

Under the system now proposed the Permanent Under Secretary of State would become the head of the Administrative Departments of the War Office, and the duties of the Central Department should devolve on the Parliamentary Under Secretary of State, together with the administration of the Chaplain's Department. Thus we should have—



Before leaving this part of the subject, it is necessary to consider how far this organisation is adaptable to the Indian and Colonial forces.

In India the Commander-in-Chief is a member of Council. His special province is to prepare the Indian Army for war, while the administrative control of the Army is vested in the hands of the military member of Council. The organisation corresponds, in fact, very closely with that existing in England before the Horse Guards and War Office were amalgamated. The result is duplication of work and waste of time and money.

In Great Britain, there are logical reasons for, but political objections against, giving the Commander-in-Chief designate a seat in the Cabinet. In India these objections do not exist, and there seems no reason why the Commander-in-Chief should not be the sole military adviser of the Viceroy of India in Council, and the only military member of Council. The Headquarter Staff of the Army and the Military Department should be united. A General Staff should be evolved from the whole, and be placed under a Chief of the General Staff, while the military member, under a new title, should control the administrative residue. These officers would be co-equals, and be in a position to act for the Commander-in-Chief during his absence in connection with his duties as Inspector-General of the Forces. The army corps might further be grouped into two armies, each under an inspector for inspection and manœuvres only.

These officers should report to the Commander-in-Chief, but have no executive or administrative duties.

In the self-governing Colonies, the official corresponding to the Secretary of State for War is the Defence Minister, who is responsible to his Government for the efficiency of the forces. The position is, therefore, similar to that obtaining in England, and the organisation would follow the same lines. Some Colonies are already appointing an Inspector-General for inspection duties in peace, who would command the troops in war, and a Chief of the General Staff to advise in regard to military policy. It would relieve the Defence Minister of much routine if the control of the administrative services were placed in the hands of one man with business instincts.

In India and in the Colonies the General Staff should be recruited as far as possible from an Imperial General Staff trained at the Imperial Staff College.

STAFF WITH THE TROOPS.

In Germany, the army corps commander is responsible to the Emperor for the efficiency and readiness for war of all the troops in his command. He administers through his Staff the whole of the Army services, even to the audit of accounts. He has very large powers for authorising expenditure and indenting for stores. His Staff consists of four sections—(1) General Staff; (2) Adjutantur; (3) Military Law Officials; (4) Intendantur and minor Staff.

The General Staff consists of two officers, whose duties comprise training, manœuvres, tours and staff rides, mobilisation, operations, intelligence, reconnaissance and higher organisation. The Chief of the General Staff is responsible to the General for the whole work of the Staff, and, as a rule, represents him in his absence.

The Adjutantur consists of two officers, who deal with daily orders, garrison duties, promotions, appointments, interior economy, discipline, recruiting and discharges, reserves, and Landwehr (including their training), and arms and ammunition.

The Military Law Officials deal with courts-martial and all legal questions.

The Intendantur deals with finance, pay, supply, clothing, construction and maintenance of buildings, etc. The Corps Intendant, as head of the Intendantur, is subordinate to the Minister of War, from whom he receives all directions on administrative matters. At the same time he is a Staff officer to the General, to whom he is responsible for the consideration of all questions relating to his section.

The minor Staff consists of a Corps Surgeon, Military Chaplain, and Corps Veterinary Surgeon.

The Army Corps Commander is assisted by Inspectors of Field Artillery, Train Dépôts and Rifles. The former is responsible for the shooting of the Field Artillery. The Inspector of Train Dépôts is responsible for the *personnel*, animals, vehicles and stores of the train dépôts (the inspection of the stores is a duty of the Master of the Ordnance), and for the inspection and instruction of the train battalions.

There is no Army Service Corps nor Army Ordnance Corps. The Intendantur deals with supply and quartering; the Master of the Ordnance with the provision of arms, ammunition and field equipment; and the train furnishes the *personnel* and horses of the supply and ammunition columns.

There are no Artillery or Engineer officers on the Army Corps Staff. The Field Artillery is entirely under the divisional generals, while the Fortress Artillery and Engineers are, for technical instruction, under the Inspectors-General of Foot Artillery, and of Engineers, Pioneers and Fortresses respectively, and for discipline, etc., are treated as other troops. The Inspectors-General of Foot Artillery and Engineers, etc., are also responsible for the instruction, maintenance and armament of fortresses, the Master-General of the Ordnance being charged solely with the manufacture of the guns and stores required. The strategical rôle and disposition of fortresses are duties of the Great General Staff, in consultation with the Defence Committee.

The Divisional Staff is organised on the same lines as the Army Corps Staff. There is one officer of the General Staff, one adjutant, two military law officials, a divisional intendant, a divisional surgeon, and two or three chaplains. There is little mobilisation, and no recruiting work, but the duties in connection with manœuvres are heavier.

The Brigade Staff consists of one adjutant, who, in addition to routine, performs many minor General Staff duties, such as the conduct of brigade manœuvres.

The organisation of a German Army in the field is modelled on almost identical lines to those adopted in peace, and with a view to supplying the Army and replacing losses, the Staff of all units acting independently includes administrative officers.

The organisation is based on the assumption that the Emperor will command. His first assistant would be the Chief of the General Staff of the Army.

In 1870 the Headquarters General Staff was divided into three sections—(a) Strategical deployment and operations; (b) Railways and communications generally; (c) Intelligence.

The War Minister and Inspectors-General of Artillery and Engineers were on the Emperor's Staff. The former, being present at the interviews of the Chief of the General Staff with the Emperor, became acquainted with all important decisions and was enabled to foresee the Army's requirements. The Military Cabinet was also represented at headquarters, and the adjutantur duties were performed by the Emperor's aide-de-camps.

The Medical Department was represented on the Staffs of the various armies, but not directly at headquarters; the Judge Advocates on Army Corps Staffs, and the Chaplain on Divisional Staffs.

In other respects the Staffs of the armies and army corps followed the same lines as that at headquarters.

In France, the peace Staff of an army corps consists of one chief, one sous-chef and five officers of the General Staff and two orderly officers. It is divided into two sections—

(i) Active section: general correspondence, military training and operations, movements, *personnel*, discipline and administration of the active army, and topographical and statistical services.

(ii) Territorial section: organisation, mobilisation, recruiting, reserves and territorial army, artillery, engineer and administrative establishments, military buildings and fortifications.

When the strength of the Staff permits, a senior officer is placed at the head of each section, and the other officers are distributed between the two sections. In war one officer of the General Staff and one orderly officer are added to the Army Corps Staff.

As in Germany, the Chief of the General Staff supervises the whole work of the Staff. The duties in the field are divided into (i) active, and (ii) office duties. The former comprise cantonments, bivouacs, medical, commissariat, reconnaissances, marches, transmission of orders, etc. The latter are subdivided into three bureaux—

(a) *Personnel* and *matériel*: organisation, strengths, losses reinforcements, transfers, remounts, promotion and rewards, police and discipline, military law, etc., ammunition, supplies and *matériel* and general correspondence.

(b).—(i) Intelligence and political affairs, ordre de bataille of the enemy, reconnaissance, interpreters, correspondents, secret service, dealings with the enemy and the inhabitants of occupied country, flags of truce, prisoners of war, deserters, contributions, and requisitions; and (ii) maps showing the strategical situation from day to day.

(c) Operations and movements of troops: orders, quarters, marches, battles, flying columns, parole and countersign, reviews and ceremonies, diaries of marches and operations.

The Staff of a division consists of a Chief of a Staff and two or three officers of the General Staff and an orderly officer; that of a brigade consists of an orderly officer.

In England, the General Officer Commanding-in-Chief of a command is responsible for the training, efficiency and discipline of the troops and the administration of the command. A General Officer is appointed to his Staff, who is entrusted with the administrative services of the command, exercising his authority by order of the General Commanding-in-Chief.

The latter administers through this officer the whole of the Army services, reserving for his own decision matters which involve important principles or policy. Relieved of routine, he devotes his attention to the training and preparation for war of the troops under his command.

The Staff of the command is thus divided into two sections: (a) General; and (b) Administrative Staff.

The Administrative Staff consists of sections under an Assistant Adjutant-General, an Assistant Quartermaster-General, the Chief Engineer,* the Principal Medical Officer, and a Chief Accountant.

Under the Assistant Quartermaster-General are Assistant Directors of—(a) ordnance stores; (b) supply and transport; and (c) remounts and the District Barrack Officer and Principal Veterinary Officer.

The duties of the General Staff of commands are identical with those allotted to the Chief of the General Staff's Department at the War Office, and are quite distinct from those of the Administrative Staff. The Officers of the General Staff deal directly with the General Officer Commanding-in-Chief or Generals on whose Staff they are serving, and not through the Administrative Staff. The duty of mobilising the troops rests with the Administrative Staff, the General Staff assuming the direction of the movements of units when their mobilisation is reported complete.

The Administrative General is charged with duties similar to those allotted to the Adjutant-General's and Quartermaster-General's Departments of the War Office, with Engineer and barrack services, and, assisted by a Chief Accountant, with the preparation of the annual estimates. He is responsible that the money voted by Parliament is properly expended.

The Chief Accountant is under the orders of the Administrative General, but corresponds direct with the War Office on questions of audit and accounting, for which he is generally responsible.

For the purposes of command and training the troops are divided into—(a) Field troops (regular Army); (b) Coast defence troops (regular and auxiliary); (c) Depôt troops; and (d) Auxiliary forces.

Divisional and brigade commanders are charged with the training for war of all regular troops quartered in the divisional area except those under (b) and (c).

Administrative officers in the area are under the divisional and brigade commanders for purposes of discipline and interior economy, but correspond direct with the Administrative General on technical subjects.

Coast defence commanders command and train all the coast defence units of Artillery and Engineers allotted to their defences and the Infantry units so allotted, whenever they are placed under his orders by the General Officer Commanding-in-Chief. They prepare and maintain the defence schemes, and are directly responsible to the Army Council for the defences of their commands. On all other matters they are under the Administrative Generals.

Regimental districts have been organised into 14 groups. The commander of a group, who is graded as a brigadier, commands the Infantry, and, with some exceptions, the Artillery depôts in the group. He is not, however, responsible for the training of the Artillery. He devotes special attention to the training and administration of the

* The Chief Engineer is also the technical adviser of the General Officer Commanding-in-Chief, and under his orders inspects Engineer units when so directed.

Militia and Volunteer Infantry units in his area, and is responsible that the clothing, arms, and equipment held at depôts for mobilisation purposes are complete, and that depôt mobilisation orders are kept up to date. He is assisted by a colonel in charge of recruiting and infantry records, who, in addition to recruiting, the charge of records, and the command of reservists, is responsible for arrangements in connection with furnishing drafts for units abroad. Officers commanding Infantry depôts are responsible to the group commander for the efficiency and discipline of the depôt, the training of recruits and the clothing, reception, etc., of reservists, and to the officer in charge of recruiting, etc., for recruiting within the regimental district.

The French, German, and English systems have not very much in common. The cardinal principle underlying the French and German systems is the responsibility of corps commanders for every detail of command and administration. This principle is perhaps more developed in Germany than in France. It is not, moreover, limited to the larger units. Divisional, brigade, regimental, battalion, and even company commanders are accorded similar independence in regard to the command, training, discipline and interior economy of their units, and the higher authorities do not interfere, except to correct faults or suggest improvements. The efficiency of the unit is the final test of the merit of the commander, and incompetence is thus easily detected and ruthlessly eradicated. The result is a ladder of responsibility, real, definite, and exacting. At every step, from the command of a company to that of an army corps, an officer rises above the mists of detail into the freer air of control and initiative. The system naturally has an important effect upon the duties of the Staff, the size of which varies inversely with the ability of subordinate commanders and the decentralisation of responsibility.

I am not satisfied that the reorganisation of the military commands and Staff effects this latter object. No distinction is made between the administrative duties which fall to the lot of commanders and Staffs of units in the field and those which must be performed in peace and war by the commanders and Staffs of home cadres.

If naval organisation be imitated, the principle that underlies its purpose should not be ignored. Fleets and ships in commission at sea are, in peace, complete with the Staff which will suffice for war, and which is entirely separate from the Administrative Staff that remains at home. The field troops at home in peace should be complete with the Staffs that will accompany them in war, and the organisation should be directed to ensure that on the departure of the field troops the home machinery shall remain unimpaired, and at the same time be capable of supplying a Lines of Communication Staff trained in administrative methods.

In advocating the division of Staff duties at Army headquarters between a Chief of the General Staff and a Chief of the Administrative Staff, and in raising objections to the same system when adopted in the commands, I am demurring not to the principle but to its application—the line of cleavage selected. The Administrative

General should exist in peace to relieve the Generals Commanding-in-Chief or the Generals of Divisions and Brigades, not of those duties which they must perform, but of those which they will not usually perform, in war.

To set the General Commanding-in-Chief free from routine, three principles should, I think, be observed—firstly, the subordinate commanders should exercise larger powers, referring nothing to superior authority that can be settled by themselves; secondly, administrative questions unconnected with the field troops, such as recruiting and the training of recruits, drafts, the construction, maintenance and appropriation of barracks, the purchase and hire of lands and ranges, contracts for supplies, clothing, works, ordnance, etc., should be entrusted to officers who, in war, will remain at home performing the same duties; and thirdly, between the General and the Staff, with the field troops, there should be a Chief of the General Staff, to whom the whole field Staff should be subordinate.

The duties devolving on the Staff with troops are—(a) Orders, diaries, marches, military training, instruction, manœuvres, intelligence and reconnaissance, musketry, signalling, organisation, mobilisation, and distribution; (b) daily orders, garrison duties, personal questions, discipline, interior economy, schools, and charge of garrison and regimental institutes; (c) supply, transport, remounts, movements by rail, supply of arms and ammunition, clothing, stores, etc., and medical and veterinary questions, so far as they affect the field troops. All the above duties are inseparably connected and should be directly under the Chief of the Staff, who should be responsible for their distribution among the available officers.

If decentralisation be complete down to company commanders, and if purely technical questions, not involving important principles or policy, be dealt with by senior officers commanding Artillery, Engineers, Army Service Corps, Army Ordnance Corps, and the senior Medical and Veterinary Officers, on their own responsibility, the Staff with the troops will not need to be a technical Staff. The higher co-ordination of system in technical matters should be left to the technical inspectors on the Staff of the Inspector-General. If these principles be observed, the Staff with troops could be reduced to the lowest dimensions, and Staff officers could devote themselves to the performance of functions really analogous to those which they will exercise in war.

For an army corps or independent division in peace, in addition to the Chief of the Staff, there should be two or three officers of the General Staff for (a) duties, two of the Adjutant-General's Staff for (b) duties, and two or three of the Quartermaster-General's Department for (c) duties. For a division, one officer of each class, and for a brigade, one officer for (a) and (b) and another for (c) duties would probably suffice. Assistant military secretaries and aides-de-camp should be abolished, their present duties being performed by properly trained officers of the Adjutant-General's Department. Generals Commanding-in-Chief should be allowed a private secretary

for semi-official correspondence. In war the Staff of the army corps would require strengthening as regards (a) and (c) duties. In an army consisting of two or more corps with its own communications, (c) duties should be placed under a Quartermaster-General, at headquarters, who would be entirely responsible for the communications, and should therefore have the assistance of a few General Staff and Adjutant-General Staff Officers in addition to a strong Administrative Staff. If circumstances prevent the Quartermaster-General from being present at the headquarters of the army, he should be represented at the headquarters by a senior officer of his own department and a small Administrative Staff. This is practically the German system, and its wisdom is corroborated by our own experience in India and South Africa. In Chitral, for example, the Quartermaster-General in India, accompanied by the officer who had had charge of all mobilisation and railway arrangements, proceeded to the front to take charge of the communications, which, under divided control, had not worked smoothly.

In South Africa, before the enemy's forces had ceased to exist as an organised army, the absence of one responsible authority for the control of all communications threw extra work on the Headquarters Staff, and impaired efficiency; but when, during the later stages of the war, the only operations for which the enemy had sufficient strength were directed against our lines of communication, the entire control of the latter was properly retained in the hands of the Commander-in-Chief, the strategical problem having resolved itself into the defence of the communications and its corollary, the effective counterstroke.

To apply the principles suggested, it is essential that the peace organisation of the field troops should be, as far as possible, the counterpart of their war organisation. The Field Army should, therefore, be grouped into commands of varying size, within reasonable distance of manœuvre grounds. At Aldershot, Longmoor, Bordon, and Portsmouth there should be an army corps consisting of a Cavalry brigade and three Infantry divisions; at Salisbury, an independent division; in the Eastern Districts, with headquarters at London, an army corps of one Cavalry and two Infantry divisions; and in Ireland, another of one Cavalry brigade, two Infantry divisions, and an Infantry brigade. The remaining regular troops amount to eight or nine battalions (which should be organised in brigades at Edinburgh, York, and Lichfield), two or three Cavalry regiments, and about four brigades of Field Artillery. These should form an independent division, with headquarters at Edinburgh. Thus we have three army corps and two independent divisions, whose commanders should train the troops of the field army for war.

To relieve congestion at the War Office, and to secure effective decentralisation in matters such as recruiting, construction and maintenance of barracks, lands, ranges, administration of hospitals and remount depôts, contract for supplies and local transport, etc.,

territorial districts should be formed, each under a Major-General of experience. The officers must be allowed to decide all administrative questions, within broad limits, on their own responsibility. They should, however, refer questions of policy affecting the field army to the generals of corps and divisions concerned, their relations to the latter conforming generally to those between the General of Communications and the General Commanding a force in the field.

The territorial generals should administer the brigade districts, into which regimental districts have now been grouped, but the training of the Militia and Volunteer units should be left in the hands of the group commanders. If, however, the Militia and Volunteers are eventually consolidated into a force for Imperial service, composed of an active and a reserve Militia, the active Militia would properly take its place permanently with the field army for purposes of training. Under existing conditions, the Militia and Volunteers cannot be attached to the field army except for manœuvres.

As regards inspection, the Inspector-General and the two Army Inspectors should inspect not only field troops, but also all military districts and institutions within their area. For the former they should be assisted by inspectors belonging to arms other than their own; and for the latter by Inspectors of Garrison Artillery, Fortress Engineers, and Equipment and Ordnance Stores.

I have recommended elsewhere that the heads of departments of the administrative branch of the War Office should be directors, and the heads of the medical and other sections would consequently be colonels. The position of the Director-General of Army Medical Services at the War Office would therefore be anomalous. His proper place is on the Staff of the Inspector-General of the Forces, where he would be in a position to represent effectively the medical and sanitary services of the army. The Deputy Director-General of the Army Medical Service should become the head of the Army Medical section of the Quartermaster-General's Directorate.

THE TRAINING OF THE STAFF.

The qualities needed in the Staff Officer, as in the commander, are: (a) Personal magnetism, courage, and health; (b) technical knowledge and skill in imparting it; and (c) reasoning powers, judgment, self-reliance, and decision.

The first is born; the second and third made by training and practice, grafted on sound education. To obtain good Staff Officers, therefore, wise selection and systematic training are essential.

Imperial needs demand that the Staff should be trained to every description of service—Home, Indian, and Colonial. It is, therefore, desirable to encourage officers of all arms and services to compete for appointment to the General Staff, and to bring them together for training at one central establishment. Staff College graduates recognise as, in itself, a valuable education that personal intercourse with officers of all arms of the service and insight into the latest phases of military thought in every branch which is obtainable

at Camberley. This advantage should be developed. For this reason the foundation of a Staff College in India seems a retrograde step. It will tend to isolate the Indian Army, and to lessen the value of the home institution, which should give the broadest possible training from the point of view of Imperial needs.

In France 190 students, in Germany 400, in England only 64, attend the Staff College course. To increase this number the College at Camberley should be made non-residential, containing only the officers' mess, library, lecture and reading rooms. The fact that officers did not sleep in the building would not lessen its educational value, while it would enable the number of students to be increased fourfold, thus providing room for as many British and Indian officers as are required for the active Staff, and for a certain number of officers of Colonial forces. There should be no extra expense to officers attending the course. The money required for the building and upkeep of an Indian Staff College would be better expended in providing free passages and scholarships for students at Camberley and the salaries of instructors belonging to the Army in India; and Colonial Governments might be invited to found similar scholarships for Colonial officers.

The selection of officers to join the Staff College should, as in all Continental armies, be by competitive examination, and there should be no limit to the number of candidates from any particular branch of the service. To attain this end boys desirous of admission to the cadet colleges should attend the same examination, as in Germany, and the cleverest should then be distributed equally between Woolwich and Sandhurst. The objection to nomination for the Staff College is that it admits officers whose military education must be brought up to the standard of the remainder, a process which involves waste of valuable time. A scrutiny of the syllabus of the first year's course will show that it deals with much that has already been learnt by those who face the competitive examination.

The subjects of examination are well chosen, but the papers set in military subjects should test the candidate's powers of reasoning, judgment, and expression only; they should demand a grasp of principle, not an exact knowledge of technical detail. This, too, is the Continental system. I do not mean to advocate the neglect of detail, of which most great commanders have been masters. The practicability of a policy depends upon the due consideration of means, but details should never be permitted to obscure the main issues.

The object of the Staff College should be to give officers a higher military education and to fit them for the instruction of others. It would indeed be a great advantage to the Army if the senior regimental ranks were filled only by officers qualified in the art of instruction. General Staff Officers must certainly possess this gift, which consists mainly in studying individual character, stimulating thought, and developing the power of judgment and reasoning. The art of teaching should therefore find a place in the Staff College

syllabus, and the students should themselves prepare and give lectures as they do in Germany and Holland.

Instruction in military subjects should comprise the study of general principles, the theoretical application of those principles to a special case, and, finally, their practical application on the ground, to expose errors in theory. Lectures should therefore deal with general principles illustrated by historical examples; they should be supplemented in every case by schemes based upon them, the theoretical being followed invariably by the practical. Military history should include the study of our own wars in every part of the globe, and military geography, the climate, resources and physical features of the Empire, in relation to their effect upon strategy, tactics, supply, transport, etc. Special attention should be paid to India and the conditions of Indian Staff work. If lectures are to arouse genuine interest, they must be delivered by officers whose opinions carry weight; and the services of instructors belonging to the Army in India are therefore essential. Instructors who have served in the Colonies would also enhance the value of the training.

With the exception of modern languages non-military subjects find no place in the British or French Staff College courses. This is not the case in the German and other Continental army systems. It is desirable that all officers who aspire to eminence in their profession should be in touch with the trend of national thought in every great branch of public life; but the time at the Staff College is limited. In the German Staff College, in addition to military subjects and languages, maritime warfare, state administration, history, geography and natural science are all studied.

I am inclined, however, to think that natural science is properly relegated to the Ordnance College. On the other hand, general history and geography, state administration, and maritime warfare might be profitably studied during the first year at the Staff College. Officers of the General Staff must consider these questions in relation to foreign countries and defence schemes, and should, therefore, receive some preliminary guidance in their studies.

The second year's course at the Staff College is thoroughly practical, and could scarcely be improved upon. The visit to battle-fields has great educational value, but that to defence works is too hurried, and not sufficiently thorough. The number of Staff tours might be increased, so as to afford every officer the opportunity of working out as many different problems as possible in connection with Staff duties. The final tour at the end of the second year's course might be conducted in connection with a General Staff tour. It should test the knowledge, capacity, and endurance of each officer, and enable the Military Board finally to arrange the classification of the students under one or more of the following headings: (a) Fit for the General Staff; (b) Fit for the General Staff (instructional branch); (c) Fit for the General Staff (topographical section); (d) Fit for the Adjutant-General's Department; (e) Fit for the Quartermaster-General's Department; (f) Unfit for the above,

Officers for the Department of the Master-General of the Ordnance should be trained at the Ordnance College, Woolwich, or School of Military Engineering, Chatham, and the course at these institutions should be modified so as to serve this purpose.

Only those officers whose faculties are specially developed should be classed under (a), since the duties of the General Staff in war demand great mental and physical activity, besides initiative, judgment, and decision. Those so classed should be attached to the General Staff at Army Headquarters for one year, as in Germany, and, if the Staff College estimate of their abilities is confirmed, should be attached for periods of three months to Infantry, Cavalry, Artillery, and Engineer units. They should then be available for appointment to the General Staff as Staff captains.

The age for entrance to the College should be reduced. In Germany a candidate must be a lieutenant, not within five years of his promotion; in France he must have five years' service and be under the rank of major. In other foreign armies the age averages about 26 years. In order that officers should be between 30 and 32 on joining the General Staff for the first time, I would suggest the limit for entrance to the College should be from 26 to 28.

If the first period of an officer's service on the General Staff be in every way satisfactory, he should be promoted major and be re-posted to his own or another unit in that rank. This system prevails in all European armies. After another year's regimental duty he should be eligible for selection as major of the General Staff; and a further satisfactory period of Staff service should qualify him for promotion to the rank of lieutenant-colonel, and for employment in command of a battalion or on the Staff. An officer could not thus reach the rank of lieutenant-colonel till about 39 years of age under peace conditions, but distinguished service in war would accelerate this promotion. Since, with the assistance of one campaign and some luck, an officer now serving attained the rank of colonel at 32, the proposed acceleration is not unreasonable. Brevet rank, a survival from the "purchase" system of promotion, should be abolished, and officers who on active service prove themselves fitted for higher rank should receive accelerated substantive promotion.

Officers for the Administrative Staff should be selected partly from Staff College graduates and partly from other sources, while good service on the Administrative Staff should qualify an officer for selection to the General Staff after a year's satisfactory probation.

The best training for the actual Staff is constant practice. In addition to the education which Staff officers receive continuously while serving under senior officers of larger experience, they should have frequent opportunities in peace of practising the duties analogous to those which they will be called upon to perform in war. Such opportunities are afforded at camps of exercise or manœuvre, and should be supplemented frequently by Staff rides conducted by officers of experience. In Aldershot, regimental,

brigade, divisional and army corps rides take place annually: those representing the smaller units being an excellent training for regimental, the larger for Staff officers. In framing the "ideas" for these rides, the complexity of Staff work with British forces must be recognised, and every kind of service, including savage warfare, hill fighting, etc., receive attention. War games, if they are to have any value, must be criticised by officers whose opinions carry weight, and if they are to arouse interest must be played rapidly. Napoleon, it is related, conducted many of his larger operations with the aid of a pair of compasses, a small scale map, and a few pins: these simple materials, therefore, might afford practice in strategy and the art of writing orders.

Part of the instruction at the Staff College should consist in lectures delivered by officers of the Staff detailed for the purpose. The preparation of these lectures would entail the study of authorities, and, by conducing to the development of opinion, would possess a distinct educational value for the officer detailed, while the students at the College would benefit by fresh ideas and less monotony in instructional methods.

CONCLUSION.

The military needs of France and Germany, their obligations and their interests, are not identical with ours. Their territories are for the most part compact, ours widely scattered; the greater part of their forces serves at home, ours abroad; their larger interests are circumscribed, ours wide as the ocean. But while no comparison is possible in these respects, the magnitude of our responsibilities and dangers is as vast, perhaps vaster, than theirs.

I have no great favour for, nor prejudice against, foreign institutions, but wherever organisation be found based upon sound principles a lesson may be learnt. Details may be modified to suit varying circumstances, but principles endure.

The proposals made have been designed to suit our military organisation as it exists, but ever with an eye to its future development. I have recognised the political necessity for the control of the Army in peace being vested in a civilian, who must have access to the best available technical advice, but I have remembered that in war successful armies have been led by men and not by councils, and I have sought the best means of giving the man who will command in war a voice in the preparation of the forces for that supreme test of efficiency, and an opportunity of gaining their regard and confidence. Subject to that act of justice, I have reduced the advisers of the Secretary of State to two, to each of whom definite responsibilities have been accorded.

Strategical policy has been divorced from administrative execution, lest policy should be bent to evade executive difficulties; and finance has been made subservient to administration, lest efficiency should be marred in its struggle with economy. The effective decentralisation of command has been accepted as

an essential principle, and its extension to the smallest units has been advocated, because I have strong faith in the ability of the British officer to work out his own salvation, given but the chance. Existing institutions have been modified or developed, not destroyed. No attempt has been made to imitate essentially foreign institutions, such as a civilian "Intendantur." Finally, I hold that there are no bonds so strong or so enduring as those of a common education, and I look to an Imperial Staff College, imbued with the spirit and traditions of the British Army, and permeated with the new ideals of Imperialism, not only to co-ordinate the training of the forces in India, the Colonies, and at home for the common object of upholding the honour and interests of the Empire, but also to foster sympathy and mutual understanding between its component parts, to consolidate their friendship, and promote their lasting unity.

ESSAY FOR THE NORTHERN COMMAND* PRIZE.

The Education of Officers with reference to the most suitable Methods to be employed in Regiments.

BY COLONEL POETT, C. B., 1ST DORSET REGIMENT.

Soldiering as a profession has undergone wide changes within comparatively recent years. These changes are to a great extent due to the increase in the size of armies and to the improvement in modern weapons. One of the most marked results is the necessity for a highly-trained body of officers who look upon the "Career of Arms" as a very serious one, entailing deep thought and much hard work. It was generally admitted that some system to train and develop professional knowledge was required and, to meet this want, examinations in certain theoretical subjects were introduced. An officer was required to pass in these subjects, in addition to the professional test, before he could be considered qualified for promotion.

It was unfortunately accepted that he could not be expected to cope with these examinations without the help of specially selected instructors; that it would be too much to ask the senior regimental officers to make themselves responsible for his instruction. The difficulty was solved by starting Garrison Classes. Officers who had left the beaten track and studied the theory of their profession were especially appointed in each district to hold a certain number of classes in the course of the year. Officers approaching their promotion were permitted to attend these classes and, whilst doing so, were excused their ordinary military duties. These duties were necessarily thrown on their brother officers. The candidates, so to speak, went into hard mental training. The moment the examination was over and the strain relaxed, they burned their books and, with a sigh of relief, returned to "soldiering."

A general feeling of tolerance, almost amounting to contempt, was felt for the instructor. These examinations had to be got through—he was a necessary evil—but his pupils hardly looked upon him as a soldier. He was familiarly known amongst them as "teacher," and, in their eyes, was perhaps just a cut above the regimental schoolmaster. This feeling does not appear to have been confined to the regimental officer. To accept a Garrison Instructorship was popularly supposed to be tantamount to professional suicide and to be rather a bar than a qualification to the General Staff. There was a certain amount of justification for this opinion as the instructor's duties were entirely divorced from practical soldiering. They were con-

* In the Northern Command the essays by Colonel Poett, C. B., and Major Ewbank were adjudged to be of equal merit. Both are published in this number of the 'Journal.'

fined to the lecture hall, varied with occasional outings for sketching, etc. The writer speaks feelingly as he held the appointment for several years.

When the system of theoretical examinations became firmly established, it soon appeared to certain thinking men that a new era had dawned and, with it, their opportunity for making money. From these men arose the army of crammers. They were chiefly able men, and they quickly realised that their popularity and financial success would increase in proportion to their ability to reduce the individual mental effort required from each candidate. The synopsis of the examination was carefully studied and short cuts worked out. It then gradually became a struggle between examiner and crammer. The one strove to propound the most impossible military conundrum, the other to devise a system by which any conundrum could be defeated with the smallest mental effort in the shortest possible time. The pace became hot, and the original object for which examinations were started, *viz.*, to develop the military knowledge of the officer, and to fit him to take his place on a level with the officers of other nations in scientific warfare, was lost sight of. Instead of his intelligence and thinking power being developed he had to strain his brain for a short "burst" in the hopes of satisfying the eccentricities of an independent examiner. If he survived the ordeal he was qualified for promotion, if he failed he had to go into training again. The regimental authorities looked on and were little more than interested spectators. They had no responsibility, and doubtless felt that as the authorities provided Garrison Instructors the latter were the most competent people to pilot their officers through the ordeal. If the officer failed, he could always fall back on the crammer.

On the 11th of April 1904, however, a bomb burst in the midst of the Army in India. On that date an order was published that Garrison Classes were to be abolished, that officers were in future to go up direct for examination from their regiments, and that the responsibility of Commanding Officers was to be actively enforced. The announcement was followed by much anonymous correspondence in the local Press which tended to prove that the object of this order was not generally understood. It abolished the system of weary "cram" and substituted one eminently practical,—a system which aimed at encouraging the regimental officer to think out for himself, and apply, in peace time, the principles of his profession, so that he might qualify himself to be an efficient commander when the time came to lead his men in the field. Further, it strengthened the hands of the Commanding Officer and left him absolutely free to exercise his responsibility and to inaugurate a sound system of professional education.

Suggestions for the lines on which such a system can be worked is the object of this paper.

There is one great danger, however, to be guarded against as it may shipwreck the best of systems. This is the danger of constant

change, and the tendency to try something new before the existing system has had a fair chance and been patiently and carefully thrashed out. Reform is in the air, and on the principle that "Ordre"—"Contre-ordre" and "Des-ordre" is bad, so constant change is fatal to the efficiency of a regiment.

A regiment is a living thing and it cannot be treated like a collection of wax works. There is nothing that upsets officers and men like constant change; they never know exactly what is wanted of them, what they are to do or how they are to do it. This feeling of unrest begets dissatisfaction and an unwillingness to do anything. A moderately good system religiously stuck to will probably give better results than a series of "brilliant" ideas burst on the battalion, only to be abandoned before they have been assimilated. These ideas may be admirable in themselves or may appear so to their "originators," but they may not harmonise with the rest of the system. Let the Commanding Officer be judged by the results he shows: if these results are bad, get rid of him; but as the responsibility is his, let him in all fairness have a chance of working on the lines that experience has taught him are the best adapted to the unit in his charge.

But in accepting the fact that the Commanding Officer is absolutely responsible for the efficiency of his unit it is not intended to imply that he is to gather into his own hands the entire instruction. For one man to attempt to train 25 officers and 1,000 men would be an impossible task. Even were he so exceptionally gifted as to be able to do so he would be inflicting a fatal injury on his regiment. His tenure of command is only for a limited period, and, instead of working and training the machine so as to get the maximum use out of each part, he would only succeed in stifling the initiative of the men that are to follow him. His rôle must be an entirely different one. He must adopt a principle of generous decentralisation and must rather aim at getting the best work out of his subordinates than at showing how able he personally may be. It is with the Company Commanders that the actual instruction must lie. The Commanding Officer's duty is limited to: seeing that everybody understands his work and does it. Decentralisation is the key-note of every sound system of instruction, but to carry out decentralisation it is essential that Company Commanders of experience be available. Initiative is not fostered and encouraged by giving untrained boys authority they are not ripe for. It is not fair to them or to the soldiers placed under their command. They start their military career over-weighted, they become discouraged; they get the habit of leaning on their colour-sergeant, and the result follows that their development is stunted.

Under the existing organisation it is rare to find eight senior officers always available for duty, and the result is that young officers are put in command of companies before they are fit for command. Apart from many other advantages the necessity for decentralising military instruction would therefore alone appear to point to the

desirability of adopting the four-company system. Practically of course it is open to a Commanding Officer to adopt the organisation by linking companies together. This is better than nothing, but half measures are never wholly satisfactory.

The adoption of the four-company system in its entirety is the only radical change that would appear necessary in the existing order of things. We have first-rate personnel, excellent books of training; all that is needed is a proper system of absorbing, digesting, and circulating the principles of the Art of War. Now that the forcing process has been abolished this should present no difficulty. The problem of administering to the mental wants of the regimental officer resembles closely the problem of supplying the physical needs of the soldier. In both cases we have good appetites, good food, untrained cooks. The question for solution is how to train the mental cooks.

It is now proposed to sketch out briefly the lines on which the military education of officers can be carried out.

It will be convenient to treat the subject under four headings—

- (a) The Recruit Officer.
- (b) The Trained Officer.
- (c) The Commanding Officer.
- (d) Regimental Reference Libraries.

(a) *The Recruit Officer.*—It is desirable that all young officers should pass through the Royal Military College before being gazetted to regiments. They should there be thoroughly grounded in the existing curriculum, but company accounts and book-keeping by single and double entry should be added. It would appear, however, that a change might be made with advantage in the present practical course. Drill as a physical development is excellent and necessary, attending manœuvres is also a healthy exercise provided it does not absorb too much of the time that might otherwise be more usefully expended. When the cadet joins his regiment he will get plenty of both. There are, however, two other subjects that he could master at Sandhurst better than at any future period of his service. These are musketry and signalling. If a thoroughly efficient staff of instructors were available he could in his first year be put through the recruits and trained soldiers' course, and, in the second year, he could be thoroughly grounded in the practical duties of a squad instructor. Given good supervision he could be instructed in range duties, in superintending a squad at target practice and in checking and correcting mistakes. When he joined his regiment he would then have nothing to learn in this respect. Further, this system would have the great advantage that all young officers would be put through the mill on the same lines, and a more level and universal system of instruction would obtain throughout the service. Schools of instruction like Hythe would then be unnecessary for the regimental officer, and these Institutes might be retained for the training of specialists and for experimental purposes.

The same remarks apply to signalling. It is easily taught and quickly picked up by young men. It is in itself excellent physical

training. It improves the eye-sight and concentrates the power of observation. Every officer on joining should be able to take his place at once as a signalling instructor. Cadets who failed to obtain a first class musketry qualification or to reach the standard required from the regimental signaller should be ruled out. Assuming that the recruit officer is qualified, as suggested above, he is, on joining, handed over to the Adjutant and kept on the square till he is dismissed his drills. He is then taken over by his Company Commander and his real military education begins. It is the business of the latter to instruct him practically in the work he has learned theoretically at Sandhurst. The work must be made interesting and the pace not forced at first. "Combined Training" and the Drill books are admirably put together, but they contain the concentrated essence of military instruction and need amplification and explanation. How to do this is the problem to be solved. Merely to read the paragraphs bearing on the different operations or to answer carefully prepared papers does not make a vivid impression on an untrained mind.

The instructor must make the recruit grasp an operation as a whole before he attempts to teach him the object and duties of the several parts. For instance, assuming he wishes to explain outpost duty. To tell off the young officer simply to command a piquet would limit his horizon of observation. The instructor must go further than this. He must set a simple scheme, explain it carefully on the blackboard, and then go out and do it practically on the ground. He must keep the young officer beside him, encourage him to ask questions, give him reasons for everything, and, above all, let him hear the criticisms on the selection of the position. The recruit will then probably get a grasp of what outposts really are, he will be able to read his text-book intelligently, and, if the Company Commander is able to quote him some well marked instance in Military History, and to put him in the way of reading it for himself, it will help him much. The judicious study of actual instances that have occurred in war will sink into his mind, teach him principles and encourage him "to think." This is the true aim and object of military instruction.

The next time the instructor does outposts, he will put the recruit in command of a piquet, send him out with a patrol, etc., and let him work independently. He will of course make mistakes, but he will at least know what he has to do. This system of course takes time, but it will be sound instruction and will repay the trouble. Further, the very trouble and thought entailed, and the necessity for giving reasons for everything, will improve the Company Commander. He will have to keep up his own reading to direct his subordinate, and he will find that nothing teaches so well as having to instruct. His duties, instead of being mechanical, will become doubly interesting, and his own thinking power will be developed.

(b) *The Trained Officer.*—The Company Commander must of course be responsible for the instruction of all his officers in—

(a) Regimental Duties; (b) Interior Economy; (c) Art of War.

He must be given a very free hand and permitted to carry out his instruction in his own way and on his own lines. The Commanding Officer must of course exercise a general supervision to ensure the Company Commanders working in line with his general views, though the actual method adopted by each Company Commander may vary. The Commanding Officer should frequently attend the lectures, the practical work, etc., but he should avoid interfering unduly. He should guide, but not lead, and foster, not crush, individuality and initiative. In this way he will get the best work out of his Company Commanders; they will train the subalterns, the subalterns the section leaders, and the section leaders the soldiers. Thus a sound system of decentralisation will be established in the unit, and military education will go on automatically independent of any change in the Commanding Officer.

(c) *The Commanding Officer*.--To ensure full scope being left to the Company Commanders to carry out their own methods it is desirable that the Commanding Officer should confine his actual personal instruction to these officers. He must set them schemes to be worked out theoretically on maps and practically on the ground, and above all he must pay the closest attention to instruction in the framing of orders. This is a subject which has been much neglected, but which needs the closest study. Every young officer should be able to frame clearly in a few words the meaning he wishes to convey; practising the writing of orders will train the mind to grasp quickly and understand an order when it is received. Lastly, the Commanding Officer must deliver periodically carefully thought out lectures with the object of explaining his own views on the Art of War. These views should be supported by instances drawn from Military History. These lectures should be presented in as an attractive a form as possible, and should aim at stimulating the interest of his audience and encouraging in them a desire to read and study this most fascinating branch of literature. The non-commissioned officers and men should be invited to attend, and each lecture should invariably be followed by a discussion.

To sum up, a sound system is the basis of good military instruction in a regiment; to obtain such a system a generous decentralisation to Company Commanders is necessary, and, to ensure sufficient competent and experienced Company Commanders being available, the organisation of the battalion in four, instead of the present eight companies, would appear desirable.

It is evident that a system on the lines briefly sketched above takes time to perfect and bring into working order. Like Rome, it cannot be built up in a day. In the "British" portion of the Army in India the necessity for efficient Company Commanders and for decentralising liberally to them is most marked. Owing to the constant flow to the Indian Army of officers just as they are beginning to learn their work a battalion is often denuded of

lieutenants and crowded up with untrained boys and young officers on the "unattached list." These all need much individual attention, but the duties of a Commanding Officer are so many and so varied that it is quite impossible for him to spare the time for this individual instruction himself. With well-trained Company Commanders, however, his mind can rest at ease. He knows his views are understood and that the system of Military Education he considers the soundest will go on automatically.

(d) *Regimental Reference Libraries.*—The importance of fostering among officers a wish to read Military History and to encourage them to apply to the solution of both practical and theoretical problems examples that have occurred in real war has already been touched upon. "History repeats itself" is an old saying, and instances of brilliant coups brought off from a knowledge of what great soldiers have done under almost similar conditions are frequently met with. If officers are to be encouraged to read, the opportunities for doing so must be placed easily within their grasp. The instructor should have it within his power at once to put his hand on the particular campaign he wishes to "point his moral and adorn his tale." If he has to wait days till he can obtain the reference, the matter will perhaps be forgotten and the opportunity lost. It is hardly fair to expect station libraries, whose receipts are small, to spend much on the provision of technical works, nor can officers individually be asked to provide themselves with books, the mere transit of which alone would probably make serious inroads on their scanty pay. The only solution is for every unit to provide its own professional library, and this can be arranged for in a very simple manner. In many regiments the expenses for newspapers, stationery, etc., are met by a small monthly subscription of from Rs. 2 to Rs. 3 per head. This sum mounts up to a respectable figure in the course of the twelve months and would be ample to meet the cost of purchasing any good military works that might appear during that period. The initial cost of purchasing a small library of from 40 to 50 books could be borne by the State. The cost of the books in the list at the end of this paper would be about £25. The books should be kept in the ante-room and issued to officers as required.

The chief difficulty is to make a good initial selection, and the list of books quoted is only intended to be a suggestion to units who do not already possess reference libraries. It would be a great advantage to the Army at large if the Commandant of the Staff College could be moved to publish a list of the works he recommends as a nucleus library, and further to notify every quarter the titles, publishers and price of books that have appeared during that quarter which he considers worth buying. The Army Orders would be a suitable medium for these notices to appear in.

The following books are suggested for selection:—

Waterloo, The Downfall of the First Napoleon, by George	Rs.	a.	p.
Hooper	...	...	...
			3 6 0

	Rs.	a.	p.
The Story of the Civil War (America), by J. C. Ropes Vol. I	6	0	0
Vol. II	12	6	0
Campaign of Fredericksburg, by Henderson	5	0	0
Stonewall Jackson and the American Civil War, by Henderson	16	0	0
Franco-German War, 1870-1, by Generals and other officers who took part in the Campaign, edited by Sir F. Maurice	12	6	0
Campaign of Sedan, by Hooper	3	9	0
Battle of Spichenen, by Henderson	6	0	0
Tactical Studies of the Battle of Colombey by Lonsdale Hale	4	6	0
Operations of the German Armies in France, by Major Blume, translated by Major Jones	6	0	0
Tactical Deductions from the War of 1870-1, by Boguslawski, translated by Colonel Graham	5	0	0
Campaign in Bulgaria, by Greene	8	6	0
War in Bulgaria, by Valentine Baker	1	1	0
Defence of Plevna, by Herbert	16	0	0
Tactical Studies of the Battles round Plevna, by T. von Trotha, translated by Havelock	5	0	0
General Gourko's Advanced Guard, by Epauchin, translated	10	6	0
'Times' History of the War (South Africa)	5	5	0
German Official Account of the War in South Africa, translated by Waters	15	0	0
Small Wars, by Callwell	5	0	0
Elements of Strategy, by Tovey	6	0	0
Strategy and Tactics in Mountain Warfare, by Miller Maguire	7	6	0
Letters on Artillery, by Prince Kraft	7	6	0
Letters on Cavalry, by Prince Kraft	6	0	0
Cavalry Studies from two Great Wars, by Lt-Col. Bonie, &c.	5	0	0
Conduct of a Contact Squadron, by Biensan, translated by Bowdler	5	0	0
Modern Strategy, by James	16	0	0
The Nation in Arms, by Von der Goltz, translated by Ashworth	7	6	0
Outlines of Military Geography, by Miller Maguire	10	6	0
Indian Frontier Warfare, by Younghusband	10	6	0
Influence of Sea Power on the French Revolution, by Mahan	1	10	0
Great Campaigns, by Adams	1	0	0
History of the British Empire, by Fortescue, in three volumes, per vol.	18	6	0
Letters on Applied Tactics, by Griepenkerl	8	6	0
Modern European Tactics, by Capt Balck	...	...	...
Infantry Man and his Weapon, by Colonel Mayne	...	...	...
Napoleon as a General, by V. Wartenburg	1	10	0
Atlas to Alison's History of Europe	...	...	...

ESSAY FOR THE NORTHERN COMMAND PRIZE.

THE EDUCATION OF OFFICERS.

BY MAJOR W. EWBANK, R.E.

The purpose of this essay is to outline a regimental system of education for officers, and to make some suggestions regarding the maintenance of military libraries.

Before discussing these questions in detail, it is desirable to notice three points which have important bearings on the subject under review. These are.—

- (1) A common misconception regarding the method to be followed in imparting, or acquiring, useful military knowledge.
- (2) Lack of time for teaching or study.
- (3) Inability to impart instruction.

The second and third points are the grounds of objections that have more often been raised.

A few suggestions on these three points may, perhaps, not be out of place.

(1) There has been for many years a feeling among a large body of officers that military education, as exemplified by the knowledge necessary for promotion tests, is merely academical, and appertaining to books; that it can be put aside until the year in which it is necessary to go up for examination; and that it is then to be crammed with as little trouble as possible. Directors of Military Education have done a great deal to combat this idea, born of many years of cramming, and of injudicious systems, but it is too deeply rooted to be easily eradicated. Not until we have in every regiment a thorough conception of the best way of imparting knowledge will military education be placed on a sound basis.

We must start with an axiom that military education is a "means to an end." Its ultimate object is to be a guide how to act under the various situations that may arise in war. It will be understood that these remarks apply more particularly to duties required of officers in time of war, although they will also apply to those connected with the maintenance of the army in peace time. The tendency of text-books is, and should be, to crystallise into general principles. A study of principles must therefore be the preliminary of military education. The point that we wish to emphasise is that a book study of principles can only be a preliminary to their real study, which must be reached by *practising their application to problems as much like those which war will present as circumstances will allow.*

No person will allow that proficiency in whist is to be gained solely by a study of 'Cavendish.' How much more true it is that

principles of tactics, reconnaissance, fortification, etc., can only be efficiently mastered by *practising their application*. The mind must be drilled by the constant solution of problems. It is only by this means that it can be trained to grasp quickly their important features; to recognise and weigh duly all the circumstances that should influence a decision; and to apply the principles best suited to the peculiar circumstances of the case. Study of ground and cultivation of an eye for country must necessarily play an important part in the education of an officer. Thus a problem may be framed in either of two ways—

- (I) by formulating an imaginary situation on the ground itself;
- (II) by using maps to represent the ground concerned.

The method under (II) is important as cultivating the power of correctly apprehending country from maps, a power very necessary in higher commanders, but we venture to think that in regimental instruction there is little appreciation of the very useful and instructive work that can be carried out on the ground. The interest of junior officers is much greater in such work; bedrock principles can be better taught by this means: and the fact that exercise, fresh air, and a study of country are combined with the work makes it much more useful for junior officers than bending over tables and poring over maps or books. The greater part of this essay will therefore be devoted to outdoor instruction in tactics, fortification, reconnaissance and map reading.

(2) Taking next the objection, very commonly put forward, that the regimental officer has insufficient time for study or for imparting instruction, as the case may be, we shall find the grounds for this objection can be grouped under two heads, *viz.*, inroads on an officer's time due to—

- (I) management of regimental institutes, coffee shops, etc ;
- (II) what may be called extra-regimental duties such as boards, courts of enquiry, etc.

In both cases, these duties are quite unconnected with the work of training, or preparation for war. It must be evident that the latter is the most important charge on an officer's time, and if, on inquiry, it is found that it really does suffer from the press of routine duties, then the latter should be curtailed with a ruthless hand.

The crux of the question of management of institutes, coffee shops, etc., lies in the desirability, or otherwise, of surrendering a portion of the profits, such surrender being a necessary corollary of handing over the management to a middle-man. As regards extra-regimental duties, boards, etc., there is little doubt that much time is wasted through three officers being assembled in conclave to perform a duty that might easily be performed by one. What can be more nonsensical, for instance, than three officers assembling to take evidence regarding the loss of a medal when one officer could equally well perform the duty.

There can be no doubt that an officer's work in training his men and his junior officers, and in educating himself, requires

considerable time, and that any hindrance to this work due to less important matters is a very serious question that must eventually be faced. The matter is so important that we would urge the assembly of an influential committee, empowered to travel and take evidence on the whole question, as to how far the time of the regimental officer is wasted, and what suggestions are possible to remedy the evil. At the same time we do think that if regimental instruction of officers is carried on out of doors on the lines advocated, at least two afternoons in the week, apart from mornings, might now be devoted to such outdoor exercises: also that officers who complain of having no time to study might be asked whether they think that in the cold weather the $1\frac{1}{2}$ hours, approximately, devoted by so many to "Bridge" before dinner is time well spent? Englishmen value games that give exercise, bodily strength, skill in hand or eye. Does "Bridge" afford any such benefits? A man may rightly claim rest and relaxation *after* dinner, and on certain afternoons of week days. Can we not take a lesson from the Japanese spirit and condemn the sordid spirit that has occasionally shown itself in the question "why should we be expected to do so much on such little pay?" Let us as officers realise that inefficiency on our part may imperil British prestige; that it is bound to impair the efficiency of our men; and that it may very probably cause unnecessary loss of life. We shall then realise that inefficiency is a disgrace, and that it behoves us to do all that we can to discharge with ability the responsibilities of the King's Commission.

(3) We now come to the objection frequently raised, "So and So has not the gift of imparting instruction; a teacher should be an expert," and so forth. We venture to think that with many individuals the wish to avoid teaching is father to the thought of unfitness for the work. There is a secret feeling that to teach a subject one must know it very thoroughly. This is partially so but not wholly the case. It is, however, due to this partial truth that teaching is such an excellent education for the teacher, so much so that it would be a great help to the education of every officer if he had to take his turn in teaching someone below him.

The theory of a promotion test is that before an officer can be promoted to a higher rank, he must show himself to be possessed of a certain standard of military ability. Having then been promoted is it unreasonable to ask him to impart his knowledge to those of a lower rank? Regimental instruction might by this means be decentralised and graduated, each captain being responsible that his subalterns are being educated up to the standard necessary for a captain, while on extra days captains and lieutenants could be taken by the majors in turn, or by the commanding officer.

The various classes should merely prepare officers for particular examinations, but should aim at a continuous course of exercises in field duties. A definite syllabus is laid down in the King's Regulations regarding the scope of knowledge required in each rank.

All that is required is a series of exercises presenting problems that will require the exercise of thought, and the application of principles.

The following pages outline a system of instruction, and exercises, in tactics, reconnaissance, fortification, map reading, and topography. With the exception of that part of tactics dealing with map problems, all the above can be carried on out of doors. It is recommended that the outdoor study of tactics should precede its study on maps.

Military law and organisation are so much book subjects, and enter so much into peace and routine duties, that no special recommendations are needed for their method of study. In the latter subject mobilisation of the unit for war is the most important subhead, and the commanding officer, by virtue of his position, should be the most competent person to frame a series of questions on it.

TACTICS.

Instruction in this subject should be designed to inculcate guiding principles for action in the various operations of war. Officers cannot carry in their heads whole drill books, but they do require to know some short principles, classified according to various descriptions of operations, which can be always present in their memories. To carry this out it is recommended that the subject be divided up as follows :—

- A. *Warfare in open country against a civilised foe.*
 - I. Conduct and formation of an Advanced Guard.
 - II. " " " " a Rear Guard.
 - III. " " " " a Flank Guard.
 - IV. Outposts.
 - V. Defence.
 - VI. Attack.
 - VII. Protection of a convoy.
 - VIII. Requisitioning.
 - IX. Selection of a camp.
 - X. Night march.

One of these might be taken at a time, and officers asked to epitomise out of 'Combined Training,' or whatever official book is suitable, some principles *designed to be a guide how to act*, and not to cover more than two sides of a half sheet of foolscap paper. This will train officers to appreciate the *raison d'être* of the tactical portions of the drill books, and will give them scope for training in extracting the essential points of instructions.

A scheme should then be set on this operation *designed to give officers practice in applying the principles.*

These may be on maps, but are more instructive, and far more interesting, if executed out of doors. If it is necessary to use maps indoors, any maps will do. Whenever possible the work should be carried on out of doors on the ground to which it refers. This has

the advantage that the work is more realistic, and officers can give their solutions verbally, and explain them better. It is not necessary to have troops out, nor to limit the field of operations to ground in the vicinity of cantonments. A railway, or bicycles, will nearly always afford the means of getting some way out and back in a day; and it is essential that a good deal of ground should be covered.

All officers should provide themselves with note books, small scale maps (1" or 2" to the mile), and some food and drink. Arrived on the ground, the procedure would be as follows:—

The instructor would dictate to all concerned a simple general idea, and a special idea. The general idea should be very simple, specifying that a red force is based on a certain place opposed to a blue force based on some other place. The special idea too should be simple, specifying the force with which the candidates would be concerned, and its movements. Then would follow some questions designed to ascertain how a candidate would act in command of the specified force, or a fraction of it. Some of the questions should require the orders which the candidate would give to his subordinates to be written down. Officers might be encouraged to work in pairs, for this favours discussion, and increases their interest in the work. If N. C. O.'s are present, one might be attached to each pair. Officers should then be informed that their answers would be received after a certain hour, at a specified place, which should be preferably one from which as wide a view as possible is obtained. After some practice at this work an officer's power to think and act more rapidly could be trained by surprise questions, *i.e.*, questions propounded to him, describing some change in the assumed situations, that demanded prompt action. He should not be unduly hurried in his reply, but should be given to understand that delay would weigh unfavourably against him.

The following are some skeleton schemes which may be an aid in framing questions. Names of places are left blank.

General Idea.—A red force is based on.....; a blue force on.....

Special Idea.—A red brigade, strength as per margin, is advancing on....., and encamped on the night of the 14th—15th August at..... Hostile scouts were reported at..... at 6 p. m. on the 14th.

Questions.—

I. What strength advanced guard would you detail for the march on the 15th?

II. Write the orders for the march.

III. As O. C. advanced guard explain your order of march.

IV. As O. C. the advanced party what steps would you take to reconnoitre the ^(defile)_(wood), etc., at.....?

V. As O. C. the advanced guard, your advanced party having reported a force of the enemy, estimated at..... infantry, and guns, in position at, how will you act?

VI. Assuming that in question V you decide to attack the enemy, explain your plans.

VII. Your attacking infantry in question VI have reachedwhen your scouts on your..... flank report that they are being fired on by guns and infantry from..... What will you do? Write out any order that you decide to issue.

VIII. The enemy threatens to advance from, and you decide to take up a position to fight a containing action, and to hold him back, until your main body can come up.

(a) Give a copy of the report that you will make to your G. O. C.

(b) Explain what position you will take up, and how you will occupy it.

It must be left to the discretion of the C. O., or instructor, how far officers may be allowed to examine the country; also which of the questions may be surprise questions. Question VII might certainly be a surprise question. Officers should not be permitted to examine ground which the scheme assumes to be in possession of the enemy. The ground will very probably suggest other questions. Some might be introduced which would ascertain how an officer would dispose, or handle, any particular unit, at any specified juncture.

Questions for a Flank Guard might be framed somewhat as follows:—

IX. You are in command of a ^(right)_(left) flank guard. Explain your march formation, and the routes to be taken by the respective portions of your flank guard.

X. Explain what your dispositions will be to cover the march of the main body from..... to

XI. Your scouts report hostile cavalry and guns at....., and hostile infantry at; what dispositions will you now make?

XII. The tail of the main body having reached, explain how you will evacuate the position that you have taken up in question X.

Questions on a rear guard might be framed by assuming that the flank guard in question IX ultimately becomes a rear guard, harassed by the enemy; or a special idea might be framed to assume one force retiring before the other. Questions might be—

XIII. Select a position for the rear guard (*within certain limits*) and explain how it will be occupied.

XIV. Explain how with reference to each unit of the rear guard the position will be evacuated, and the order in which they retire (*assuming that the enemy has pressed along specified routes*).

XV. Explain what work any R. E. units with the rear guard might do.

XVI. Explain what the order of march of the rear guard will be, and the action of the mobile troops; cavalry, mounted infantry or horse artillery.

Questions on outposts might be framed by the special idea assuming that a force of given strength is to halt at a specified place. The most convenient size for the assumed force is a brigade with a few guns, cavalry, artillery, and the necessary transport and supply. Questions might be—

XVII. As G. O. C. brigade write the orders detailing the outposts.

XVIII. As outpost commander with the orders and force detailed, in answer to XVII, write the outpost orders.

XIX. As O. C. the outpost cavalry, explain your dispositions.

XX. As O. C. the section of the infantry outposts, explain—

(a) how you will march your force to the ground allotted to you;

(b) how will you protect yourself while posting your picquets, etc.;

(c) explain in detail the disposition of your force by day;

(d) what modification you will make for night;

(e) what arrangements you will make for reconnoitring, and strengthening your position;

(f) what you will do if attacked.

XXI. As O. C. outposts, assuming that your instructions are to hold the outpost position if attacked, until reinforced by the main body, explain how you will carry this out, in event of attack.

Questions on defence should indicate whether a position is taken up to fight an offensive-defensive action; or a containing action as in question VIII, with subsequent retirement; or a holding on defence as in VIII (b).

Assuming that the position is for an offensive-defensive action, questions might be—

XXII. Write the orders for the occupation of the position.

XXIII. Explain what rôle the mobile troops (cavalry, mounted infantry, and horse artillery) might take.

XXIV. As O. C. a section of the defence (or O. C. a specified battalion), explain in detail the dispositions of your force, including machine guns.

XXV. Explain what means can be taken to strengthen the position.

XXVI. Explain what your measures for local counter-attacks (if necessary) are; and your measures for the final counter-attack.

XXVII. Explain what you will do if the enemy attempts a turning movement by....., specifying the route.

The question of the reconnaissance of a position would come in before its attack. Under the heading of instruction in reconnaissance we shall outline a scheme for the reconnaissance of positions for attack and defence.

The questions that follow here concern the tactics of the attack. The special idea should assume as much information of the defenders as it is considered likely that a reconnaissance might ascertain. Special

regard must be paid to the great difficulties in locating troops owing to smokeless powder, and the range of modern arms. If thought desirable a question might be framed to ascertain what steps the officer would take to carry out a reconnaissance.

XXVIII. Write the orders for the attack.

XXIX. As O. C. the frontal (or containing) attack explain your dispositions, route, and objective.

XXX. As O. C. the main (or flank) attack explain your dispositions, route, and objective.

XXXI. As G. O. C. what measures will you take :—

(a) to protect your flanks;

(b) to maintain communication between the containing and main attacks;

(c) to ensure effective co-operation of the artillery by maintenance of its fire up to the last moment possible;

(d) to carry out a pursuit, if needful;

(e) and to cover a withdrawal, if unsuccessful?

XXXII. Your attacking troops having reached, the enemy makes a strong counter-attack from..... How will you meet this?

XXXIII. You have reason to believe that the enemy's centre at..... is weakened by his withdrawing troops to..... to meet your flank movement at..... Explain how you will act. Questions XXXII and XXXIII of the above might be surprise questions.

Protection of a Convoy, etc.

XXXIV. You are placed in command of a force as per margin to escort a convoy of..... ^(carts) _(animals) proceeding from..... to..... The enemy consists of..... and was last reported at (place) at (time). State what route you will select for the convoy, giving your reasons?

XXXV. State how you will dispose of your force?

XXXVI. The head of your convoy having reached..... your scouts report hostile cavalry at..... and hostile ^(infantry) _(guns) at.....; explain your dispositions, and write the orders that you issue to unit commanders.

XXXVII. Finding it impossible to proceed further you decide to laager the convoy, and defend it as long as possible; explain where, and how, you will do this.

A question for an attack on a convoy might be—

XXXVIII. In command of a force as per margin, you receive instructions to intercept the march of a hostile convoy which it is believed will march from..... to....., leaving the former place at about.....; explain how you will carry out instructions.

Requisitioning.—Placed in command of a force, as per margin, you receive orders to proceed with..... carts to requisition the villages of..... leaving camp at.....

XXXIX. Explain—

- (a) your dispositions on the march out;
- (b) the strength, and dispositions of your covering party;
- (c) the dispositions of, and orders for, the requisitioning parties;
- (d) your arrangements for signalling communication;
- (e) your dispositions of covering and requisitioning parties for the return march.

Selection of an Encampment.—A question might be framed as follows:—The special idea being that a brigade of specified units is to halt for the night in the vicinity of a specified place. The special idea should state whether the force is encamping, or bivouacking, and the nature, and quantity, of transport should be stated. Officers should ascertain from encampment regulations, or pocket books, the size of camps that the fighting portions of units require, and should make a rough calculation of the space required for transport.

XL. Explain with a rough sketch the location of the camp giving your reasons for your choice. The sketch should show—

- (a) spaces allotted to the several units and transport;
- (b) the water-supply for drinking, watering animals, and washing, with any means to be taken to increase the supply, or facilitate delivery (officers should give a rough calculation to show that the supply will be sufficient);
- (c) location of latrines, and cooking places.

Hill Warfare against a guerilla or tribal enemy.—The following questions deal with warfare of the nature encountered on the N.-W. Frontiers of India; consequently the following exercises can only be profitably carried out if the candidates are in or near the hills. The questions of selection and defence of the camp are very much bound up with outposts. Special measures are necessary for the defence of the camp perimeter, and the outposts differ in so many respects from those in an open country that, in addition to all the encampment questions under XL, the following might be added:—

XLI. What special measures will be taken for the defence of the camp perimeter?

XLII. What work will the Sappers and Miners be employed on?

XLIII. Explain the detail of the outposts, giving—

- (a) positions, strength, and equipment of picquets, stating which battalions supply them;
- (b) the instructions given to officers commanding picquets;
- (c) the orders given by an officer commanding a picquet to his men.

XLIV. As O. C. No.....picquet state—

- (a) how you will march your men to the position assigned to you;
- (b) what you will do to entrench your position;
- (c) how you will carry out your withdrawal.

XLV. You are appointed O. C. the rear guard with instructions to cover the withdrawal of the force from camp, and withdraw the outposts. The enemy is expected to harass the retirement. State how you will carry this out?

XLVI. Assuming that the enemy gathers in strength to harass the withdrawal, state what your probable subsequent action to the last question will be as far as.....

XLVII. As brigade major write the orders for the march of the force next morning to....., stating separately any points affecting discipline, or security on the march, that you think might be in standing orders.

XLVIII. Estimate the time that you consider it will take the force to get out of camp from the start of the head of the advanced guard to the tail of the rear guard, and deduce therefrom the probable hour of arrival of the latter in camp.

XLIX. Explain the measures to—

- (a) protect the flanks of the march;
- (b) escort the baggage and hospital;
- (c) replace fallen loads, keep the baggage closed up and keep discipline among the drivers.

L. The brigade is halted for the night at..... The march next morning will be to attack the.....pass where the enemy has gathered in force.

(a) Explain your plan of attack, including measures for protection of the baggage.

(b) Write the orders for the attack.

LI. The brigade is encamped at..... A force, strength as per margin, is to proceed to ^{forage}_{destroy} the villages of..... Write the orders for the expedition.

LII. As O. C. the force in the last question, explain your—

(a) measures to protect your flanks on the outward and return marches;

(b) dispositions to carry out your task.

LIII. Assuming that on your return march events delay you so much that darkness overtakes you when your force is at..... explain what you will do.

LIV. As G. O. C. the brigade you hear that the force in the last question is hard pressed, and still.....miles from camp at.....P. M., state what action you will take.

All the foregoing tactical questions can be worked out of doors. It will be found that in this way a large amount of very interesting and instructive work can be accomplished. In all cases the reasons why officers decide on a particular line of action should be asked, and credit should always be given for good reasons if an officer has examined the ground well. These exercises teach officers to study, and observe, ground in conjunction with tactics. In the part which follows, dealing with reconnaissance, this subject will be treated especially with this end in view.

Tactical Problems on Maps.

The exercises for outdoor work that have been dealt with above will, it is hoped, give some aid to the framing of questions on maps. The only distinction is that candidates have in the latter subject a map of country instead of the country itself. They thus get training in reading maps, and in correctly apprehending the tactical importance of features delineated.

We shall deal later with outdoor training in the use of maps. For the present our remarks will be confined to tactical indoor schemes on maps.

Candidates should be encouraged to begin by studying the maps, noting the following:—

- (a) where roads go to, and the scale of the map;
- (b) names of villages, towns, woods, rivers, hills;
- (c) drainage, *i.e.*, directions in which streams flow, and which are valleys, and which spurs;
- (d) features impeding the movements of troops, such as water, marshes, woods, or steep ground;
- (e) and features impeding view, or affording cover, such as woods, buildings, cuttings, embankments, ridges, etc.

Having thus formed a picture of the country in the mind, the candidate should read the scheme carefully at least twice, after which he may at once start to write a brief appreciation of the situation.

It will be found instructive to frame the questions, requiring an appreciation, plan with reasons, and the orders that would be issued to carry out the plan. An appreciation appears to be a stumbling block to many until they grasp its usefulness.

To arrive at a full consideration of all the circumstances in a tactical problem several points must be considered, such as the task to be carried out, the possibility of its execution in more than one way, the courses the enemy is likely to adopt, and the action by which they may be frustrated. Officers who find difficulties in this question may usefully be recommended to write their appreciation in the form of answers to four questions.

I. *What is my task?* This will test their appreciation of the latitude of the orders, or instructions, of the scheme.

II. *How can I carry it out?* This should *not* go into any detail of disposition of troops, but briefly consider if there is more than one way in which the task can be effected.

III. *What courses of action are open to the enemy?* This should, in brief telegraphic language, refer to every possible contingency.

IV. *How can I frustrate the contingencies of III?* If the answers to this are supplied the candidate should have considered the best way of meeting every contingency.

So far no particular plan of action is decided on, but by the time an appreciation on these lines has been written, the candidate will probably have formed in his mind a tolerably sound plan of

action. He will have wasted no time thinking over plans, and then rejecting them, because writing the appreciation will have guided his thoughts into channels most economical of time.

The answer to the second question should very briefly state the plan. The reasons that are to justify the action decided on can generally be given by a back reference to paras. or sub-paras. of the appreciation.

It may seem as though the 3rd question—asking a candidate to write the orders that he would issue—involves merely a repetition of his answer to the second. It will frequently be found, however, that a good plan may be outlined; but that the orders written would not lead to the execution of that plan. The subject of writing orders, the power of expressing instructions in language so clear that it shall be complete, and yet so concise that it shall never unduly hamper, is one that requires especial cultivation and practise. In all cases orders should be written just as they are written on service.

Tactical map schemes for hill warfare are not so instructive as those for open country. It is more difficult in the former to appreciate from a map the relative command of minor features, the cover afforded by the steepness of slopes, and broken nature of the ground.

RECONNAISSANCE.

Reconnaissance is a subject which has hardly received in our army the attention that its importance requires. The word is used in a two-fold sense, *viz.*

(a) reconnaissance proper, observing and describing, by means of reports and sketches, the features of country, having due regard to their tactical importance.

(b) Scouting, *i.e.*, searching the country to find the enemy, or endeavouring to ascertain the strength, and dispositions, of a hostile body.

We will consider the subject under the former category, and suggest means for combining exercise in the study of ground with the application of tactical principles. It is clear that a mere knowledge of abstract tactical principles is not of much use in the field unless combined with the power of appreciating the extent to which features may aid or impede a tactical plan, that is to say, of appreciating the tactical importance of a study of ground. At the same time a knowledge of tactical principles is necessary to gauge the tactical importance of physical features. The object of training, therefore, should be to combine the study of ground with the application of tactical principles, and to impress on officers the inter-dependence of the two faculties. To this end exercises might be framed on the following lines, which we will further illustrate by a number of skeleton schemes. After the statement of a simple general and special idea the candidate should be asked to submit—

(a) a reconnaissance report, illustrated by a sketch, of a piece of country, or feature, with the idea that a specified tactical operation is to be carried out on it;

(b) a statement how he would carry out the operation referred to, with a specified force, over the country reported on;

(c) the orders that he, as staff officer to the above force, would draft for the execution of the above operation.

Attention must be particularly drawn to two misconceptions that may arise.

Firstly, officers must clearly understand that the above three exercises are combined merely for instructional purposes.

It would not be the duty of an officer making such a reconnaissance in practice under (a) to dictate to the General how troops should be disposed, unless such dispositions were specially asked for.

The third exercise (c) is merely added to give practice in writing orders, work which requires much practice.

Secondly, officers must understand that a reconnaissance sketch is not an exercise in topography. If they make this mistake valuable time will be wasted in the elaboration of a pretty and finished sketch and much time will be devoted to *looking at the sketch* which should have been devoted to *observing the country*.

Minute accuracy, artistic finish, or elaborate detail are of little importance so long as the sketch supplements and aids the report in conveying to the mind of the G. O. C. a clear idea of the *tactical importance* of the features delineated; furthermore it must be remembered that time may be of great importance. An artistic report might be very full and complete, yet quite useless through arriving too late.

Text books, and military pocket books, give instructions regarding the preparation of reports and sketches, and the various points useful to notice according to the nature of the reconnaissance. It will be found useful, purely for instructive purposes, to give officers a list of the points specially requiring to be reported on, but they must understand that, in practice, they would probably have to decide themselves what points to notice, over and above any information particularly asked for.

The topographical conventional signs need not be slavishly adhered to provided that the sketch is *clear*. As it is to be supplementary to the report, the latter should refer to the sketch. It will conduce to clearness and uniformity if such reference is done by means of *black* figures in *red* circles. If all heights are shown in red figures, reference figures, delineated as above, both in the report and on the sketch, strike the eye at once as being reference figures, and are not confused with figures denoting quantities.

The top of the sketch should always be towards the enemy, except in the reconnaissance of a road along which a retreat is contemplated, and the north point should always be put in as accurately as possible.

Officers should be allowed every assistance from small scale maps which they should take out with them, and enlarge to the desired scale in the field. The mere enlargement affords good training in map reading, and need not be a lengthy or elaborate operation. A few

salient points can be enlarged, either roughly by means of squares, or by measuring with a pencil; any minor detail necessary to take off the maps can then be sketched in relatively to that already drawn.

There will probably be features of tactical importance that are not shown on the maps; these must be sketched in as the reconnoiter proceeds over the ground. The most convenient method of carrying the sketch is to mount it on a cavalry sketching board. When it is desired to sketch in any detail from the ground the sketch should be roughly oriented by means of the small compass in the board.

A rough ray can then be drawn from the observer's position on the sketch to the distant feature, and its distance estimated. Should the feature be outside the sketch, its direction can be shown by an arrow along which its distance is written.

When carrying out the third exercise a very common mistake is to refer in the orders either to the reconnaissance sketch, or to a letter, or contours, on a map when specifying places. The orders should be written exactly as they would be on service, and features, and places, referred to should be recognisable on the ground.

The following three skeleton schemes are illustrations of what may be done, and following them is a list of some other reconnaissances that might be carried out.

I.

RECONNAISSANCE OF A POSITION THAT IS TO BE ATTACKED.

General Idea etc. etc.

Special Idea.

The red force, strength as per margin, is halted at....., on theth. It has orders to advance, and, if possible, seize Spies report that the enemy, strength unknown, occupies..... The G. O. C. red force sends you to make a reconnaissance of the enemy's position with a view to attacking it.

(a) Required a report illustrated by a sketch noting particularly—

- I. general front and extent of the hostile position;
- II. any advanced posts;
- III. the best artillery position for the attack;
- IV. any approaches affording cover;
- V. the nature and condition of the ground as affecting the movements of all arms;
- VI. and the best fire positions for the attack.

Arrived at.....you are fired on from....., and cannot proceed beyond the line.....to.....

(b) State in detail how you would dispose the force to carry out the attack.

(c) As staff officer to the red force, draft orders for the attack in accordance with your answer to (b).

When carrying out this scheme officers should not be permitted to advance where they would expose themselves unduly to the

assumed enemy. They should make the best reconnaissance they can by observation of the position from a distance.

The following scheme should refer to the same general idea, but the special idea should now be for the blue force of the first scheme, and should be a reconnaissance of the same position with the idea of its occupation by the blue force.

The reconnoitrer will now be able to go over the position and consider it from the defence point of view. He will then realise the value, or otherwise, of his estimate of the weak points of the position, as made in the first reconnaissance, and the second scheme will correct the first.

II.

<i>General Idea</i>	etc.	etc.
<i>Special Idea</i>	etc.	etc.

You are sent to report on the position at.....which will be occupied at 5 A. M. to-morrow by the blue force (to be specified). (*The nature of the defence should be specified.*)

(a) Required a report and sketch, noting particularly—

I. the front and extent of the position and the approaches that it covers;

II. the flanks, whether strong, or weak, and if weak, how they can be strengthened;

III. any advanced posts and if defensible;

IV. the best artillery positions;

V. the enemy's probable artillery positions;

VI. any obstacles to the enemy's advance;

VII. any covered approaches;

VIII. and the ground, as affecting counter-attacks.

(b) State in detail how you would dispose the blue force in defence, indicating any work that the R. E. units might carry out in four hours.

(c) As staff officer for the blue force, draft orders for the occupation of the position conformably with your answer to (b).

The following reconnaissance is one involving a search for, and report on, a suitable route across country with a view to the march of a specified force to surround, or attack, a particular objective. The objective should be selected to ensure cross-country work off the roads, as in frontier and other campaigns, officers may have to carry out reconnaissances in roadless countries, and therefore require practice in this sort of work. They should carry out this scheme in pairs, but each officer in a pair should do the reconnaissance.

III.

General Idea.

A British mixed brigade occupies.....The country in the vicinity is occupied by rebels, well armed but without artillery.

Special Idea.

Information is received that the rebels have a store of ammunition at.....

You are sent to select, and report on, a route from.....with a view to a force, as per margin, being sent to surround the village, if possible, at dawn.

(a) Required a report, illustrated by a sketch, noting particularly—

I. The nature of the route; extent to which passable; and whether a night march is practicable.

II. The nature of the country as affecting the movements of troops.

III. Water-supply *en route*.

IV. Any features favouring, or impeding, the advance and retirement.

The force might be a small one, say, two battalions, a section or two of a battery, with a few cavalry, or mounted infantry (if the country is traversable by horsemen), and a few R. E., or Sappers and Miners, if demolitions are to be effected.

(b) Explain in an addendum to the report, with reference to your sketch, the measures and dispositions that you recommend—

(i) to protect your outward and return march;

(ii) to surround the objective.

Officers should be instructed in all road reconnaissances to make notes for the report on a square piece of paper, or in a note book, and then finally to condense and epitomise the report under the proper headings in numbered paragraphs.

Other reconnaissance schemes that might be carried out are—

IV.

Road: with a view to an advance or retirement.

V.

River: with a view to effecting its passage by a given force.

In this scheme a tactical question might ask for the disposition of the force and orders for the operation.

VI.

Of a portion of a railway with a view to either—

(a) the movement of troops;

(b) the provision of works for its defence against a guerilla enemy.

A fortification exercise involving the design of, and calculation of men, tools, and tasks for, one of the works proposed might be added.

Reconnaissance under (II) is more properly the work of cavalry. The attention of all officers should be drawn to the great difficulties that smokeless powder and modern ranges have imposed on this phase of warfare. Officers will obtain the best training in this subject by selecting and training men to scout. Troops that

are quartered in India or Africa have a far more favourable training ground than in England.

Appendix I gives a list of points on which officers usually make mistakes in preparing reconnaissance reports and sketches.

FORTIFICATION.

The tendency in the past has been to drown this subject in book details, and insufficiently to realise the fact that it is a branch of tactics. Too much importance has been attached to exact dimensions, and to the supposed exact quantity of work which a man may be expected to do in a given time.

No fortification details or calculations are of use unless they fulfil the tactical requirements of the situation. The drawings and dimensions given in text books may be looked upon as types which experience has proved to be the best suited to normal conditions, but it should be shown that the works proposed in a scheme are suited to the particular circumstances of the case. In other words, the particular conditions or circumstances should dictate the design, and not hard and fast text-book details. Similarly the text-book data as to the quantities of the various kinds of work that a man can do in a given time have no exact value. The strength of the man, his state of training, condition of the tools, nature of material worked on, and climatic conditions, will all affect the quantity of work done. The reason why such data are given as averages is to give officers a rough idea of what men can do, and so prevent them assigning tasks to men which they could not possibly execute, in the time and with the tools available.

It is to show in schemes that the tasks that they allot are possible of execution with the men, tools, and time allotted, that officers are asked for calculation of tasks. Minor works for which no data are available may be grouped together, and a party, allotted with tools, may reasonably be expected to do the work in the time given. It is always better to expect less work than that calculated from data; and it is advisable to have in every company some spare men who may be allotted to cooking and unforeseen odd jobs. The four hour tasks need not be rigidly adhered to. It will sometimes be found that eight hours are available for work, and if the four hour tasks are rigidly adhered to, half the men working while the others are resting that some of the tools will not be in use. Assuming, of course, that the works proposed are in accordance with tactical requirements, and that the force may be attacked at the end of, say, eight hours, the problem is to get the most labour out of the tools and men available, without unduly fatiguing the men. In cases of emergency men could work for eight hours, but the possibility of their being attacked at the end of it must be borne in mind. The character and armament of the enemy as well as the whole circumstances of the case must decide what is best, but it may perhaps be taken as a normal case that if men work hard for four hours they require at least four hours rest; while if they

work for three hours and rest two hours, they could then work for another three hours.

The latter arrangement seems more convenient for eight hours' work where it is desired to do as much work as possible. It simplifies the allocation of troops to tasks, for one company can devote all the time to the preparation for defence of the portion, or section, which it is subsequently to hold. It is also better that one party of men should complete a work, and not hand it over to another party.

In all schemes the provision of adequate covering parties, and the collection of water, food, and ammunition, if necessary, should be considered matters of the first importance. Where a defence is to be at all protracted, and the water-supply is not within the line of defence, the collection and storage of an adequate supply is a very important matter.

We shall now consider two branches of this subject which particularly require training by means of outdoor schemes, *viz.*, the defence of localities against all round attack, such as posts on a line of communication; or when a small force is cut off from its base and surrounded; and, secondly, the application of fortification to defensive positions.

Map schemes of this nature are unsatisfactory because it is then difficult to describe the details of the situation which should largely dictate the nature and dimensions of works designed. When a scheme is framed out of doors on the ground to be defended in the assumed scheme, officers can see exactly what view is obtained from certain points; how a difference of level of a foot or so may improve a view; what the water-supply is; what the thicknesses and materials of walls and buildings are; what the natures of the soil, timber or brushwoods are; and what materials are actually procurable on the spot in addition to any tools, wire, etc., assumed to be available. Ingenuity in taking all these into consideration and in making the best adaptation of them to the circumstances of the case is the training that should be carried out.

It is important that officers should thoroughly grasp the object of fortification in the two classes of schemes that are here considered. In the first class the defensive aid afforded by fortification enables a relatively small force to hold a given post or locality either as long as may be necessary, or until it can be relieved; in the second case the aid it affords economises the number of men necessary to hold vital points, or points lending themselves to defence, thus leaving more men available to take the offensive.

The following is a skeleton scheme to illustrate the former class.

I.

4 companies infantry, each 100 strong, rank & file.	<i>General Idea.</i>
1 machine gun.	You are marching with a convoy and details, as per margin, from.....to.....The country is occupied by hostile tribesmen well armed but without artillery.
20 Sappers.	

100 mules with
drivers.
10 women.
12 children.

Special Idea.

From information received it becomes necessary for you to fortify yourself at.....and to hold out for at least 36 hours.

16 crowbars.
160 pickaxes.
160 shovels.
20 felling axes.
40 hand axes.
40 billhooks.
8 handsaws.
12 mallets.
20 pliers.
100 lbs. guncotton
fuze and detonators.
1½ miles of telegraph wire.

The tools available are given in the margin.

(a) Required a concise statement of your measures for defence, illustrated by a rough eye sketch, showing the works that you propose and their order of importance.

(b) Hand sketches of the works proposed, and a statement showing the distribution, strengths, reliefs and tools of working parties.

(c) Distribution of the garrison and any special orders regarding the defence.

(d) An explanation of the arrangements for women, children, and animals.

(e) A description of the arrangements for water-supply, hospitals and conservancy.

(f) A statement of the advantages and disadvantages of the position.

A similar scheme might be framed assuming that the locality to be fortified is to be a post on a line of communications.

The answer to the second part of question (b) is best supplied in tabular form with columns as follows:—Number of task; nature of task; men (one column to each company); time; tools (one column to each kind of tool); and remarks.

It is easier then when doing the work to see how tools are being used up and easier to check.

The work should be divided into sections in the scheme, and if possible, intact units, such as companies, allotted to prepare for defence, and to defend, each section, exclusive of a general reserve.

It may sometimes be convenient for each section to provide a portion of the covering troops, *i.e.*, those covering its own front.

A convenient way of commencing instructions in these schemes is to appoint one of the officers under instruction to be the commander of the assumed force, and to let him have another officer as staff officer.

The remainder can be considered to be company officers of the assumed force. The commander would then divide the work into sections, and allot a proportion of the assumed tools and a company, say, to each section. The scheme of defence in each section would then be worked out by the officers assumed to be company officers

of the company allotted to that section. Non-commissioned officers might also be attached. Thus in the scheme described, assuming that each of the four companies had two officers, ten officers could be instructed. The officer acting as commander, aided by his staff officer, could collect the schemes for the four sections and forward them with his remarks to the instructor.

The work should not be hurried. It is more important for instructive purposes that it should be thorough and interesting, rather than that it should be carried out in a given time. In all cases there should be a discussion over the whole work when finished.

THE FORTIFICATION OF DEFENSIVE POSITIONS.

A scheme for instruction in the fortification of a position can be drawn up on the lines of the defence scheme described in outdoor tactics. The special idea should specify the nature of the defence; the force to hold the position; the limits of the position; and the tools and time available. The work can be distributed among several officers as described in the previous fortification scheme. The officers in each section of the defence should mark with small flags the sites of works that they propose, and should be able to explain to the commander of the defence the nature of the work and the men, time and tools allotted for its execution. The commander should explain verbally, or by writing, to the instructor the whole scheme of defence, taking care that all is in accordance with his tactical plan for the defence of the position.

It will often be instructive to look at the position afterwards from the attackers' point of view, to see what intermediate points would aid the attack if seized, what approaches give cover, and to what extent the proposed defensive works would appear to have strengthened the position.

There is often a tendency to think that field fortification is the work of engineers, and in schemes we see engineers told off to make emplacements for guns. It should be an understood thing that every unit should be able to throw up whatever cover it requires in hasty fortification, and be able to execute any hasty work necessary to clear the field of fire. In some cases lack of sufficient tools may make the aid of engineers desirable, but as a general rule the latter will be required for works requiring more skilled labour such as roads, water-supply, redoubts, large clearances, demolitions, and the construction of dams and obstacles.

We have so far considered field fortification. The syllabus of the course in military engineering required for promotion-tests includes also field geometry; knots, and lashings; the construction of sheers, gins and derricks; bridging by means of trestles and the simpler frame bridges; demolitions with, and without, explosives; and encampment engineering.

Field geometry can be taught anywhere, and a man who has had any sort of a mathematical training finds little difficulty in it.

Knots and lashings and all work involving the use of spars can only be satisfactorily carried out by making the knots and handling the spars. Every company has to do some bridging as part of its company training, so that it would be a great help to instruction in this subject if every set of barracks for an infantry regiment had the spars, lashings, ropes, etc., necessary for a single lock bridge as part of the barrack equipment.

If spars and ropes are unobtainable the next best thing is to work with string and model spars, but instruction with models does not teach men various little points necessary to know when handling heavy spars.

Demolition with explosives can only be satisfactorily learnt by men fixing, and firing, charges with their own hands. Every opportunity should be taken at any rate to let them see charges fired.

Mere book instruction would, however, be greatly aided if each instructor had dummy slabs of guncotton, primers, detonators and fuze. Such dummies would be easy of manufacture; officers would learn the appearance of the explosive materials, and, with the dummies, instruction in arranging charges could be carried out.

The portions of military engineering coming under the heading of encampments might be left for officers to do with their men in company training. It includes cooking devices; latrines; water-supply and the construction of shelters and huts. If it is still considered necessary for officers to know how to make fascines and gabions, these might be done in company training also. Fascines are comparatively simple and might often be useful in the field. It is, however, very doubtful if gabions will play much part in any but siege warfare, and skilled sapper labour or supervision would then be available. The labour required for their construction is so great, as compared with other revetting materials, that the occasions on which infantry, cavalry or artillery officers would wish to make them unassisted by R. E. would be very rare.

MAP READING AND TOPOGRAPHY.

We have placed map reading before topography because, although the making of maps, *i.e.*, sketching, is urged as being good training in map reading, we hold that map reading should be looked upon as good training for map making. Furthermore, every officer should be conversant with the use of maps, while it would be seldom that officers who possessed no topographical ability would be selected to do any extensive map making. There are many men who cannot draw and who are quite lacking in the ability to express anything graphically. Yet if all officers had a thorough training in reading maps, we believe that all could be expected to make a sketch just sufficiently clear to aid a reconnaissance report, and so save a considerable amount of writing in the report. A clear distinction should be made between a reconnaissance sketch and a finished sketch. Men who showed topographical ability should be selected for further training in topographical work, and when they had passed through

it, their names should be recorded. Our wars are frequently carried out in countries of which we have no sufficiently detailed maps. This applies particularly to expeditions from India. It has frequently happened that officers other than R. E. have been lent to the Survey Department temporarily. These officers, called upon to assist in compiling maps, or to make sketches of localities for the Intelligence Department, would be selected on account of their taste for this work, and it would be useful to have a list of such officers. In Appendix I will be found a list which covers the mistakes that officers usually make in the details of finished sketches.

The accuracy of such sketches is best tested by having a skeleton tracing made from a survey map. Correctional remarks can be grouped under "accuracy," "contouring," "detail," and "finish." If each officer has been given a copy of Appendix I, correctional remarks under the headings of detail and finish can draw his attention to the instructions that he has omitted to carry out.

The following remarks deal with map reading which every officer should do. A very good method of teaching officers the shape of ground as shown on small scale contoured maps is to let them enlarge *on the ground* a portion of the ground represented on the map, and then to interpolate further detail than the map shows by observing and walking over the ground. They learn thus the relation between distance on the ground and distance on the map and the size of the more common features on the maps on different scales. Comparing the contours with the ground also trains the eye to understand the delineation of spurs, valleys, ridges, knolls and cols.

The use of small scale maps in the field can then be proceeded with as follows:—

A group of officers should go out with the instructor, taking a plane table, maps, pins to secure the maps, protractor with scales on it, a compass, a few needles, clinometer, note book and pencil.

The officers under instruction should be asked to carry out the following and be shown how to do each if necessary:—

(a) Orient (or set) the map without a compass, by the identification of points on the ground and map.

(b) Orient the map with the aid of a compass, assuming that the magnetic variation of that compass is known.

(c) Explain how setting the map by method (a) could roughly ascertain the variation of the compass if the map has a north point, and the variation is unknown.

(d) Show how to ascertain the variation of a prismatic compass by taking the bearing of a road on the ground, and comparing it with the bearing of the road from true north on the map.

(e) Explain how to ascertain the direction of true north—

- i. from a compass, knowing its variation;
- ii. with the aid of a map.

(f) Explain how to find your place on the map—

- i. by identifying points and roads.

ii. by re-section from two points identified on the map, and ground after the map is oriented.

(g) Explain how the use of a 3rd point in *f* (ii) would check the orientation of the map.

(h) Explain how to ascertain the direction of a point invisible on the ground.

(j) Explain how to check, and ascertain, the index error of a clinometer.

The instructor should, after these, point to features on the ground and ask officers to identify them on the map and *vice versa*. Practice in judging distances can then be obtained by drawing circles on the map with the observer's position as centre. The radii can be 1,000, 2,000, 3,000 yards, etc., to scale. Officers can then look at the map, and identify on the ground, points that come within the several distances.

Practice in judging differences of level can be obtained as follows:—

Take the angle of elevation, or depression, to any distant point and calculate its height above or depth below the eye from its horizontal distance, as ascertained from the map, and by means of the formula $V. I. = \frac{H. E. \times 19.1}{D}$.

The above course of map reading will habituate officers to the use of maps in the field. When possible, maps of various scales should be used.

MILITARY TOPOGRAPHY.

It will be found that officers require special instruction in the use of instruments, particularly in such points as—

(I) Appreciation of the fact that every compass has its own variation.

(II) Methods of ascertaining the variation of a compass.

(III) Use of the plane table.

(IV) Use of the cavalry sketching board.

(V) Use of the night marching compass.

(VI) How to test the accuracy of a clinometer.

These points are so important for topographical work that we give below a detailed syllabus for instructions.

Compass.—Construction. Graduation in degrees and nautical points. The causes of variation and dip. The test for incorrect centring of the card.

Night Marching Compass.—The principle on which it is used; graduated externally; and methods of setting it.

Watkin Clinometer.—Construction. Test for index error, both on a level surface and on a hill. Method of adjustment to correct the index error.

Abney Level.—Construction and use.

Methods of ascertaining True North.—By a map. From the Pole Star. By a shadow. The very rough method of using a watch

Ascertaining the variation of a Compass.—Orienting a map by recognised points. Comparing the magnetic bearing of any line with its true bearing, as given by a map. Taking the bearing of the Pole Star, or of the sun at noon.

Plane Table.—Construction. Methods of fixing points by traversing, intersection, and re-section. Appendix II gives the methods of re-section. Officers usually require special instruction in the method of ascertaining differences of height from the vertical angle and the table of horizontal equivalents which is on the sketching protractor.

Cavalry Sketching Board.—Method of fixing paper. Principle of its use. Methods of setting the index line on the compass glass (detailed in Appendix III).

There are two points that are rarely dealt with in text books on Topography. The first is an explanation of how the H. E. formula ($H. E. = \frac{V.I \times 19.1}{D}$) is built up. When once officers understand how this formula is arrived at they will never forget it and will understand its limitations.

The second is the question of reading slopes on foreign contoured maps by the aid of the normal scale of slopes, even though the map be not contoured on the normal system. An illustration of this will be found in the preface to Griepenkerl's "Letters on Applied Tactics." The maps in this book are actually contoured to 16.4 feet vertical interval. If they were contoured on the old normal system being at a scale of $\frac{1}{25,000}$, they would be contoured at 47.35 feet vertical intervals. 47.35 being nearly three times 16.4, the normal scale of slopes can be used if it is remembered that it will read the slopes three times steeper than they really are.

Pictorial Hand Sketches of Positions.

When making a reconnaissance of an assumed enemy's position in hilly country, very useful information may often be given by an outline pictorial sketch. Men who cannot draw often think that such sketches are quite beyond their powers.

Any person will find that if he follows the following simple rules he can turn out a very useful sketch.

Let us assume that a picture sketch is to be produced of a distant position which extends from a hill called A to a hill called B. The reconnoitrer, provided with paper and an H. H. pencil with a fine point, has a piece of paper, say, 12 inches broad. The sketcher holds his pencil out horizontally at arms length, and finds that, so held, it takes three pencils' lengths to cover the whole length of the position. His paper is 12 inches wide. He therefore decides that 4 inches of paper shall correspond to a pencil's length. Now beginning to sketch one end of the position he finds that, holding the pencil out horizontally at arm's length, a road crosses the ridge, say at half a pencil's length from hill A. He accordingly ticks off on this sketch where the road is to appear a half of 4 inches from the left of the paper.

Next to get the height of hill A he turns his pencil up vertically, still holding it out at arm's length. It may be one quarter of a pencil perhaps. The height of hill A is now ticked off on the paper one quarter of 4 inches, and so on. By this means all distances, horizontal, and vertical, will be sketched in their true relative proportion as they appear to the eye of the sketcher, and at the beginning the size of the sketch is made to suit the size of the paper so as to include just what is required.

A very common fault is to waste time putting elaborate shadings on the sketch. This is not required and rarely conduces to its beauty. All that is required is just the outlines of hills, spurs or nullahs, with just sufficient detail to enable them to be recognised. The distant hills should be outlined in faint, but firm, lines; those nearer, in lines a little darker, and anything in the immediate foreground can be put in much blacker. If trees are to be put in, it is quite sufficient to sketch their outline, and shade them by diagonal lines. When the sketch is made, lines should be drawn up from important parts, and either reference numbers put at the tops of the lines, or the names of the places written across the lines. If reference numbers are used they should be black, in red circles, and the number used to indicate any particular place should be the same as that on any plan showing that place.

Finally, information should be given from which point the sketch was taken: the compass bearing from observer to some definite point in the sketch, and its distance.

B

The question now arises whether any improvement can be effected in existing orders for the education of officers.

As already suggested, it is most desirable that an inquiry by a strong committee should be made into the whole question of whether the training for war of officers and men suffers from waste of officer's time. By "waste of time" we mean time spent on work for which there is no real necessity, looking to the maintenance, efficiency, and training of the army. It must be clearly realised that the responsibility of training a unit is very great, and that if an officer is capable of being entrusted with this important duty, he is worthy of trust in minor matters. Failure to realise this is responsible for much waste of time. A horde of Babus, black and white, will rise up in opposition to any reform in this matter, but until this Augean stable is cleared no real progress will be made. The committee will, we feel confident, gather ample food for reflection, and its instructions should direct it to make specific proposals to remedy the evil. These should be carried out with a strong, though discriminating, and skilful hand. We have not suggested any detailed programme of work because this must be left to commanding officers to arrange, looking to the facilities for outdoor work, capabilities of the officers, and time available. We do think, however, that many commanding, and senior, officers require some hints as to the method of conducting outdoor exercises.

The last point to be considered is the question of military libraries, their system, cost and maintenance. It will be well to take the last point first, and to recognise that Government is not likely to assist in their maintenance, so the officer must put his hand into his pocket. There is nothing new in this, for he has already to put his hand into his pocket freely to buy the books necessary for his studies. The question is, "cannot this expenditure be co-ordinated into some co-operative system?"

The polo fund system of a small monthly subscription from each officer suggests itself. The monies so accumulating could be used in either of two ways —

- (I) to form regimental libraries;
- (II) to form station libraries.

The second system has several objections. The supply of books would not be sufficiently decentralised, and would suffer in a measure from the disadvantages attaching to the use of the library of the Royal United Institution of India.

Thus Lieutenant A writes for and obtains a book. Lieutenant B shortly afterwards wants it also, so Lieutenant A is informed that having had the book a fortnight he must return it. This is not much use if Lieutenant A wants the book *for study*. The only thing to do in this case is for Lieutenant B to buy the book. No lending library can allow its book to be out for an indefinite period.

The disadvantages that may perhaps be urged against the regimental library system are that the funds of native regiments would be much poorer than those of British regiments, and that a regiment moving in relief does not wish to drag about a library. Officers who leave a regiment often present it with plate, volumes of "Punch," the "Encyclopædia Britannica," letter racks, pictures, etc., the carriage of which forms a portion of the baggage of a regiment moving in relief. Such additions to Mess adjuncts are, no doubt, very acceptable. Probably presents of useful military books of reference would be equally useful, if perhaps not quite so ornamental. The great advantage of the regimental library system would be that if two officers wish to use a book, they can, by mutual arrangement, arrange to have it at different times, or, what is far more useful, arrange to study it together.

Suppose, for instance, that each officer contributes two rupees a month to his regimental library fund. A native regiment with 12 officers would have 288 rupees per year to spend, or nearly 100 rupees a year more than the yearly allowance that was given by Government to buy books for a garrison class library. The booksellers would probably make the same concessions to regimental libraries, regarding the reduction of price, and credit system, that they made for garrison class libraries.

The funds of the library might also be devoted to the purchase of two or three plane tables when the first need of books had been met. At present every officer going up for the (c) promotion examination practically has to provide himself with a plane table. Plane.

table work is not work that all the officers of a regiment require to do at the same time. They are expensive encumbrances for each officer to keep up, and are by no means part of his field service equipment.

APPENDIX I.

NOTES TO AVOID MISTAKES COMMONLY MADE IN RECONNAISSANCE REPORTS AND SKETCHES.

REPORT.

1. All names of places should be block printed.
2. Paragraphs should be numbered.
3. A report should not refer to a name of a place not given on the accompanying sketch, unless it is a place the locality of which is outside the sketch, or a locality of common knowledge.
4. A report may indicate the suitability of portions of the country for the action of the various arms, but should not dictate the dispositions of troops for any given tactical operation, unless this is specially asked for.
5. Avoid the use of terms like "right," "left," "in front," "behind," etc. Specify directions by compass bearings. The one exception to the above lies in describing the banks of a river, which should always be described as the right, or left, bank, the observer being assumed to be looking down stream.
6. Special attention should be given to the object for which the reconnaissance is ordered, and information given as clear as possible on the points on which information is specially asked for.
7. Tactical instruction, and practice in writing orders, can be combined with instruction in reconnaissance by asking for the dispositions of a given force to carry out the operation for which the reconnaissance is ordered, and then having the orders written to carry out the operation. When this is done the orders must not refer to reference figures or marks on the reconnaissance sketch or map.
8. Information already on the sketch need not be repeated in the report unless it is specially important.

SKETCH.

9. The top of the sketch should be towards the enemy except in the reconnaissance of a road along which a retreat is contemplated since in such a reconnaissance the starting point of the sketch is at the bottom of the paper.
10. A scale of distances should be given at least 6 inches long. If the sketch is for a road reconnaissance it need only show furlongs and miles.
11. If the sketch is contoured, a scale of horizontal equivalents should be given, and contours should be numbered in red. All heights should be in red figures.

12. North points should always show true north. If both true and magnetic north are shown, indicate in figures the amount of the variation of the compass used.

North points should be at least 4 or 5 inches long. For a road reconnaissance on a long slip of paper more than one set of north points should be drawn.

13. Every sketch should have at the bottom information on four points—

- (a) bearings how obtained;
- (b) distances how obtained;
- (c) altitudes how obtained;
- (d) the locality and height of the place taken as a datum for heights.

14. Woods can be shown by diagonal green chalk lines. If so shown, trees should not be also drawn. The tactical points to notice are—

- (a) nature of trees;
- (b) nature of undergrowth and obstacle to movement;
- (c) concealment afforded.

15. Villages built of stone or burnt brick; also walls, bridges, etc., of such materials are shown in red. The exception is the stone outer wall on hill roads, villages, houses, etc., of sundried brickwork or mud, which should be shown in black. Notice as regards villages—

- (a) their defensibility;
- (b) their inflammability;
- (c) their supplies (if asked for).

16. Metalled roads should be indicated by burnt sienna chalk.

17. Show where branch roads go to, or come from, and give the distances where ascertainable.

18. If hand sketches are given of land-marks, positions, etc., the following information relating thereto should be given:—

- (a) where the sketch was taken from;
- (b) direction in which looking;
- (c) approximate distance of the object sketched.

Don't waste time over elaborate shading. Mere outlines of distant hills, trees, etc., often suffice. Nearer objects may, if desired, be shaded with cross lines.

19. Reference figures (black in red circles) should be sufficiently large and clear to strike the eye at once. The same figure should not be repeated on the sketch; use different figures for different localities. If a hand (pictorial sketch) is appended to the plan, and has on it lines drawn upwards with reference figures, let these correspond with the reference figures on the plan. All reference figures in the report should be in a red circle to make it clear that they are reference figures.

20. Names, writing or printing on the sketch should be quite clear and not too small. A sketch may have to be examined by a dim light.

21. A reconnaissance sketch should not have dispositions of troops marked on it, unless this is asked for.

22. It is not necessary to contour a sketch in order to show the shape of the ground. This can be done by "form" lines, *i.e.*, contours at no particular vertical interval which need not even be continuous. Relative heights can be approximately shown by a few heights marked on the sketch. Valleys will be distinguished from spurs by the former having the bed of the stream marked.

APPENDIX II.

NOTES ON RESECTION IN PLANE TABLE WORK.

From one fixed point.—

An observer at A on the ground marks this point as "a" on his sketch. He has fixed another point B, represented by "b" on the sketch. He decides to next set up his table at C.

Procedure.—Take a ray to C. Go to C and orient the board by looking back along this ray to A. (Back-angle method.) Put a pin at "b." Direct the sight-vane on to B, pivoting it on "b" and draw a line to cut the first ray. The intersection fixes "c" on the sketch.

(2) *From two fixed points.*—Assume in case (I) the sketcher neglected to take a ray to C from A. The result is the board must be set by compass at C, and two fixed points are necessary for resection.

Procedure.—Orient the board by compass. Treat *each* of the two fixed points similarly to "b" in case (I). This gives two lines whose intersection fixes "c."

(3) *Conditions as in (2) but no compass available.*

Three fixed points are necessary to orient board, and fix C. Assume the three fixed points are "a," "b," "d," representing A, B, D, respectively, on the ground. There are two methods.

(a) *Tracing paper method.*—Fasten the tracing paper on the sketch. Put a pin in anywhere. Draw a ray from it, which we will call x, towards A. Similarly draw a ray from the pin towards B. Call this ray y; also a ray from the pin towards D, which we will call z. Unfasten the tracing paper and shift it until the rays x, y, z, respectively, go through the points "a," "b," "c." Then prick through on to the sketch the point from which the rays were drawn. This gives the sketcher's position.

(b) *Three-point problem.*—Turn the board so that the line "a," "b" on the paper points towards B on the ground. Draw from "a" a line towards D. Call this ray "m." Now turn the board so that the line "b"—"a" points towards A on the ground. Draw from "b" a ray towards D. Call this ray "n." Mark the point where the rays "m" and "n" intersect as "p." Turn the board so that the line "p"—"d" is directed towards D. The board is now oriented. Proceed to resect from any two of the points, as in case (2).

(4) *Choice of points from which to resect when several are available.*

(a) Choose a near point in preference to one further off because any error due to incorrect orientation is least with resection from a near point.

(b) Select points so that the rays fixing your position meet in a good angle, *i. e.*, not too acute.

(c) Note that the two methods 3 (a) and 3 (b) both fail if the four points, *i. e.*, the three fixed points, and the position of the plane table happen to be on the circumference of a circle. If this is the case move the plane table to a fresh place.

APPENDIX III.

NOTES ON CAVALRY SKETCHING BOARD. SETTING THE COMPASS.

To set the compass box to sketch a long road. End of road visible.

(1) Turn the length of the paper pointing towards the end of the road. Turn the lid of the compass box until the line on the glass is over the compass. The latter is then set, and the line on the glass gives magnetic north.

(2) *The end of the road invisible: a map is available at the starting point.*

Orient the map on the ground. From this the general direction of the road can be obtained. Place the board with the length of its paper in this direction: then proceed as in (1).

(3) *The end of the road invisible: its general bearing is measured off a map before going out.*

The general bearing, as measured from the map, is the bearing from true north. Draw a line on the paper parallel to its long edge. Looking up the paper, set back anti-clockwise from this line the general true bearing. This gives true north on the paper. Plot from this the magnetic north with the variation of this particular compass. Turn the lid of the compass box until the line on the glass is parallel to the magnetic north.

Note that in (1) and (2) magnetic north is first obtained on the paper, while in (3) true north is first obtained.

If the road winds about equally to the right and left of the general bearing, begin the sketch in the centre of the width of the paper. If it winds more to the right, begin more to the left, and *vice versa*.

Take care that the lid of the compass does not shift while at work.

In conclusion we would say that a great part of this essay has been purposely devoted to an endeavour to show how work out of doors can be made both instructive and interesting. The writer has carried out these methods of teaching for some years so far as the country permitted it, and feels confident that schemes carried out on these lines will command a great deal of interest and be of good value to teacher and pupil alike.

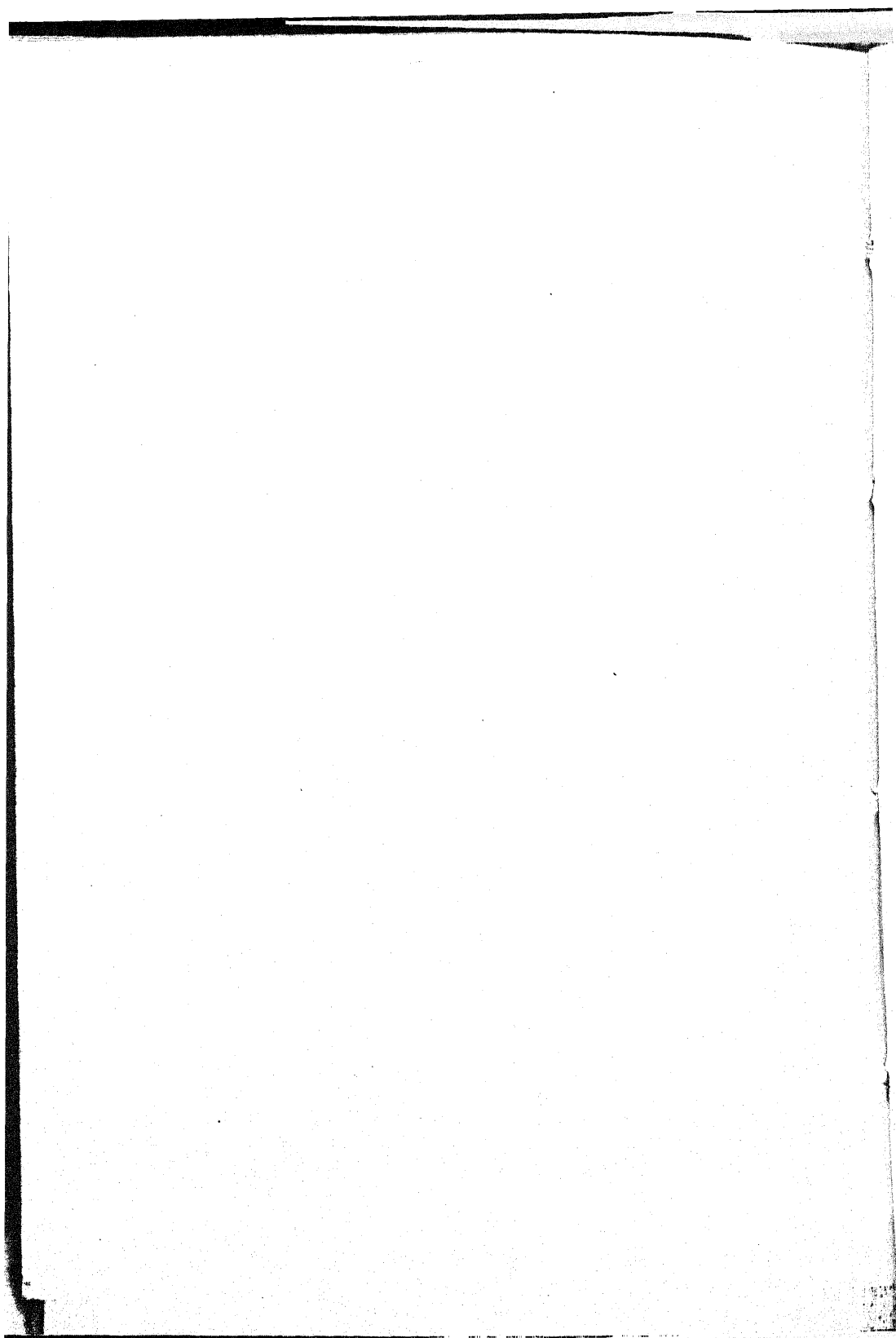
THE FALL OF TIPU SULTAN.

BY MAJOR R. G. BURTON, 94TH RUSSELL'S INFANTRY.

It may at first sight be supposed that there is little to be learnt of value under the conditions of modern warfare, from our earlier campaigns in India, as there have been such great changes, since those events, in means of communication and in the arms and munitions of war. I take it, however, that such a supposition is entirely erroneous. The great principles of military science are immutable, and have endured through all time, varying only in the manner of their application. Valuable lessons may be drawn, not only from recent wars, but from the campaigns of past ages, from those of Cæsar and Alexander down to the present day. There is, indeed, too great a tendency to follow exclusively the experiences of the most recent war, whether it be in South Africa or Manchuria, and to base upon them our military principles and reforms. Nothing can be so fallacious or have so narrowing an influence as this tendency, which ignores the great teaching of history—that circumstances govern everything in war, and that principles must be adapted to ever-varying circumstances. The principles of the co-operation of the three arms; of concentrating a superior force against a decisive and weak point; of the topographical key of a position; and of a simultaneous holding and decisive attack, which are so often indicated as of modern origin, have not been evolved in recent times, but are exemplified in ancient history, and remain the same whether armies are composed of savages armed with bows and arrows and stone-throwing machines for ordnance, or organised and disciplined troops provided with the most scientific modern weapons. No better example of a simultaneous holding and decisive attack exists than that carried out by Alexander at the Battle of the Hydaspes* on the ground where, 2,000 years later, a British General displayed so much less tactical skill in his battle with the Sikhs, than did the Macedonian conqueror in defeating the army of Porus.

Even in the time of Alexander the Great, we find that mounted infantry were employed, and their mobility was utilised in the advance of the Macedonian army during the invasion of India. Again, in 1817, General Smith organised and employed mounted infantry in the pursuit of Baji Rao Peshwa. Yet the employment of mounted infantry in South Africa was generally thought to be something quite new!

* "Invasions of India," by Major R. G. Burton—Journal of the United Service Institution of India—July 1903.





Tippoo Sultan

But there are other lessons to be learnt from history besides those of strategical and tactical manœuvre. We have lately seen in the Far East how victory is the outcome of national military spirit, which is, indeed, the foundation of all military efficiency. This military spirit is based on true patriotism, a quality best fostered on the glorious traditions contained in those pages of history which glow with the lurid light of war. A people who are ignorant of the history of their country, and of those struggles which proved its fitness to survive, must lose much of this spirit of patriotism; an army ignorant of its traditions, and a regiment without knowledge of the glorious episodes recorded in the names emblazoned on its colours, must lose much of that *esprit de corps* which should nerve them to great deeds on the day of battle. Francis Bacon truly said three hundred years ago, "Above all, for empire and greatness, it importeth most that a nation do profess arms as their principal honour, study, and occupation," and those were true and eloquent words uttered in the House of Commons on the death of Wellington, whose great career commenced in the campaign about to be described, that "he left his great name and example as an imperishable monument, exciting others to like deeds of glory and serving at once to adorn, defend, and perpetuate the existence of our country among the ruling nations of the earth."

For these reasons, if for no other, the History of India must ever be of vital importance, especially as it furnishes the only traditions of our Native army, and offers us examples of unsurpassed valour and endurance. Moreover, a knowledge of history is essential both for political and military administration; for, as the Historian Gibbon wrote, "wars and the administration of public affairs are the principal subjects of history." History is philosophy teaching by example, and that is a true saying which tells us that "history repeats itself." Its importance stands exemplified in the work of the greatest administrator of modern times, who has recently told us that he has "devoted his whole life to preaching the lessons of the East, its history, and its traditions."

The effects of the great revolutionary disturbance which convulsed France and swept over the whole of Europe at the close of the eighteenth and commencement of the nineteenth century were not confined to the western continent, but were experienced throughout the civilised world; and although British territories in India were not shaken by the tramp of revolutionary or Napoleonic armies, the English Power in that country was threatened indirectly by concurrent and consequent events. The struggles for supremacy between the French and English during the eighteenth century had ended in the complete triumph of the latter, thanks to the efforts of Clive, Eyre Coote, and Stringer Lawrence, but some vestiges of Gallic influence still remained. The Nizam of Hyderabad had in his employment a force, officered by Frenchmen, amounting to 14,000 men, who bore the colours of the French Republic, and had the cap of liberty

Political state of
India at the close of
the 18th century.

engraved upon their buttons. In Mysore there were some French officers in the service of Tipu Sultan, whilst many adventurers of the same restless and enterprising nation held commands in the armies of the Maratha Chieftains.

There were, moreover, bitter enemies of British power in all the Native States from the banks of the Ganges to the southern point of the Peninsula. Over a large portion of this area the Chiefs of the Maratha Confederacy, which had risen upon the ashes of the Mughal Empire, held sway, and only awaited a favourable opportunity to oppose the aliens by intrigue or by force of arms. They, too, had eventually to be dealt with, and were not crushed until the conclusion of two great wars.* Tipu Sultan, though stripped of much territory and humbled by Cornwallis, was full of animosity and eager to measure swords again with the army of the East India Company. The peace concluded with him by Cornwallis could not be lasting, and it would have been better had the siege of Seringapatam in 1792 been carried to the bitter end, and the walls of that stronghold razed to the ground.

In 1798 Lord Mornington, better known as the Marquis Wellesley, arrived in India as Governor-General, and at once inaugurated that great policy which was to have such a far-reaching influence on the establishment and consolidation of British power in the East. Shortly after his arrival it came to his knowledge that Tipu Sultan had despatched an embassy to the French Governor of Mauritius, asking for aid against the English, and, consequent on a proclamation by M. Malartic, Governor of that island, calling for volunteers to serve with the Mysore army, of the landing of a small body of French adventurers, who disembarked from the French frigate 'La Preneuse' at Mangalore on April 26th, 1798, and proceeded to Seringapatam.

It is interesting to note also that the mightiest figure of those times was concerned to some extent in the events about to be described. It was the fear of French influence and French aggression which formed the main motive of the Governor-General's policy. In 1798 Napoleon Bonaparte stood in the shadow of the pyramids on the threshold of Oriental Empire, his eyes directed towards the East, where he dreamt of following in the footsteps of Alexander of Macedon. He himself said at this time—"My glory is already at an end; there is not enough of it in this little Europe. I must go to the East; all great glory comes from there." "Europe is a mole-heap; only in the East have there ever been great Empires and great cataclysms; in the East there are six hundred millions of human beings." He would march on India and plant "the new pillars of Hercules," where Alexander planted them, on the banks of the

* 1. "Wellesley's Campaign in the Deccan"—Journal of the United Service Institution of India—September 1900.

2. "The Last Maratha War"—Journal of the United Service Institution of India—July 1901.

Both by the present author.

Hyphasis. His dreams were rudely disturbed by the Battle of the Nile, and dissipated by the repulse before Acre, but not before he had written to Tipu Sultan a letter, couched in the following terms, which was intercepted by the British Government, and formed one more nail in the coffin of the Tiger of Mysore :—

To the Most Magnificent Sultan, our greatest friend, Tipu Saib.

Headquarters, Cairo, 7th Pluviose, 7th year of the Republic.

"You have already been informed of my arrival on the borders of the Red Sea with an innumerable and invincible army, full of the desire of delivering you from the iron yoke of England. I eagerly embrace this opportunity of testifying to you the desire I have of being informed by you, by the way of Muscat and Mocha, as to your political situation. I would even wish you could send some intelligent person to Suez or Cairo, possessing your confidence, with whom I may confer. May the Almighty increase your power and destroy your enemies."

Bonaparte.

At the same time the French at Hyderabad were in communication with their compatriots in Mysore, and were prepared to place their very considerable military power, as well as their political influence with the Nizam, at the disposal of the Sultan. It will be seen, therefore, that the Marquis Wellesley's fears were by no means groundless, especially as the French had considerable naval strength in the East, and it was not until more than a dozen years had elapsed that the British were in a position to undertake over-sea expeditions against the French colonies in that part of the world.*

War with Mysore being imminent, it was feared that the French at Hyderabad might attempt to seize the Nizam's Dominions, and secure them to the domination of France; or that if the corps raised by the celebrated adventurer Raymond were brought into the field against Tipu, it would endanger the cause of the British, with whom the Marathas and the Nizam were allied against that potentate. Accordingly a treaty, providing for the disbandment of the French corps and the increase of the British Subsidiary Force at Hyderabad, was concluded with the Nizam's Government. In pursuance of this agreement a British force under Colonel Roberts was marched to Hyderabad to awe the French corps into submission. On the 20th October 1798, a portion of the British troops took up a position in rear of the French, while the remainder were disposed to march against their front. The French battalions, clamouring for their arrears of pay, now broke into open mutiny, and seized and confined their officers. Next morning Colonel Roberts drew up his force opposite the French lines, and summoned the men to unconditional surrender. Eventually after some trouble and delay they were induced by Captain (afterwards Sir John) Malcolm, the Political

* "The Conquest of Java" by Major R. G. Burton—Journal of the United Service Institution of India—October 1901.

Officer, to lay down their arms. The French officers were delivered up and deported to their own country, whilst many of the men remained in the Nizam's service under Colonel Finglas and other British officers.

Negotiations with the Sultan of Mysore proving to be of no avail, a force was assembled at Wallajabad under Lieutenant-Colonel the Hon'ble Arthur Wellesley (afterwards Duke of Wellington) in November 1798, and in December, the Governor-General himself proceeded to Madras to direct the military preparations in case the Sultan should continue refractory. On the 3rd February, orders were issued for the advance of the British army into Mysore. The Army of the Carnatic, which had been originally assembled under Colonel Wellesley, had now been moved to Vellore, where Lieutenant-General George Harris* took over command in January. This force commenced its march on the 11th February, and was joined by the Nizam's Contingent, consisting of some infantry, partly re-formed out of the recently disbanded French troops, and a large body of cavalry under Mir Alam, as well as 6,000 of the Company's troops subsidised by the Hyderabad Government. A second force, the Bombay Army, under General Stuart, had been collected at Cannanore on the Malabar Coast, and co-operated in the advance on Seringapatam.

The British forces were composed of the following troops :—

ARMY OF THE CARNATIC, UNDER LIEUTENANT-GENERAL G. HARRIS.

CAVALRY—Major-General Floyd.

1st Brigade (Colonel Stevenson)	{ 19th Light Dragoons. 1st Madras Cavalry. 4th " "
2nd Brigade (Colonel Pater)	{ 25th Light Dragoons. 2nd Madras Cavalry. 3rd " "

ARTILLERY—Colonel Smith.

Detachments Bengal and Madras Artillery—Colonels Montague and Saxon.

Corps of Madras Engineers—Colonel Gent.

The Pioneer Corps—Captain Dowse.

INFANTRY.

Right Wing—Major-General Bridges.

1st Brigade (Major-General David Baird)	{ His Majesty's 12th Regiment. 74th Regiment, Scotch Brigade.
--------------------------------------------	------------------------------------------------------------------

* Afterwards Lord Harris.

3rd Brigade
(Colonel Goudie) { 1st Battalion, 1st Madras Infantry.
1st Battalion, 6th Madras Infantry.
1st Battalion, 12th Madras Infantry.

5th Brigade
(Colonel Roberts) { 2nd Battalion, 3rd Madras Infantry
1st Battalion, 8th Madras Infantry.
2nd Battalion, 12th Madras Infantry

Left Wing—Major-General Popham.

2nd Brigade
(Colonel Sherbrooke) { His Majesty's 73rd Regiment.
Regiment de Meuron.

4th Brigade
(Lieutenant-Colonel Gardiner) { 1st Battalion, Bengal Volunteers.
2nd " " "
3rd " " "

6th Brigade
(Lieutenant-Colonel Scott) { 2nd Battalion, 5th Madras Infantry.
2nd Battalion, 9th Madras Infantry.

Nizam's Contingent—Colonel the Hon'ble Arthur Wellesley.

Company's troops—Lieutenant-Colonel Dalrymple.

His Majesty's 33rd Regiment, 1st and 2nd Battalions, 10th Bengal Infantry, 2nd Battalion, 2nd Madras Infantry, 2nd Battalion, 4th Madras Infantry, 1st and 2nd Battalions, 11th Madras Infantry.

Artillery—Major Howley, Commanding.

Nizam's Infantry—Captain John Malcolm.

Four Battalions under Captains Phillips and Schrey, and Lieutenants Tomson and Baynes.

Nizam's Cavalry under Mir Alam.

The following list of the Staff may be of interest to the descendants of these officers:—

GENERAL STAFF.

Quarter-Master General	...	Lieutenant-Colonel Richardson.
Deputy Quarter-Master-General	...	Major Allan.
Assistant Quarter-Master-General	...	Lieutenant Sydenham.
Adjutant-General	...	Lieutenant-Colonel Close.
Acting Deputy Adjutant-General	...	Captain Turing.
Assistant Adjutant-General	...	Captain Pearce.
Deputy Adjutant-General	...	Captain Young.
King's Troops	...	Major Beatson.
Surveyor-General	...	Captain Orr.
Captain of Guides	...	Lieutenant Thomas Sydenham.
Deputy of Guides	...	

Paymaster of the Army	...	Mr. Gordon.
Paymaster, King's Troops	...	Lieutenant-Colonel Hart.
Commissary-General of Stores		Lieutenant-Colonel Carlisle.
Deputy Commissary-General of Stores.		Captain Prescott.
Assistant Commissary-General of Stores.		Captain Friese.
Commissary of Provisions	...	Major Corner.
Commissary of Grain	...	Major Hart.
Agent for Bullocks	...	Major Dallas.
Judge Advocate-General	...	Captain Leith.
Chaplain	...	Dr. Ball.

STAFF OF COMMANDER-IN-CHIEF.

Public Secretary	...	Lieutenant-Colonel Agnew.
Private Secretary	...	Captain Macaulay.
A. D. C.	...	Captain Scott.
A. D. C.	...	Captain Marriott.
Persian Interpreter	...	Lieutenant-Colonel Close.
Intelligencer	...	Captain Macleod.

General Harris was not only invested with unrestricted Military Command, but was empowered to exert all the civil authority which would have belonged to the Governor-General in his situation. He was further provided with a political and diplomatic commission, composed of Colonel Wellesley, Lieutenant-Colonel Barry Close, Lieutenant-Colonel Agnew and Captain John Malcolm, with Captain Macaulay as Secretary. This commission was not, however, entitled to act, except in obedience to the orders of the General.

BOMBAY ARMY, UNDER MAJOR-GENERAL STUART.

His Majesty's 75th and 77th Regiments, Bombay European Regiment.

Detachment of Bombay Artillery.

1st and 2nd Battalions, 2nd Bombay Infantry.

1st and 2nd Battalions, 3rd Bombay Infantry.

1st Battalion, 4th Bombay Infantry.

1st Battalion, 5th Bombay Infantry.

Pioneer Corps.

Exclusive of the Nizam's troops, General Harris had under his command a force of 30,959 fighting men, completely equipped and supplied, and, as Major Beatson, who took part in the campaign, wrote, "as well appointed, as perfect in point of discipline, and as fortunate in the acknowledged experience and ability of its officers in every department, as any that ever took the field in India. It comprised a more numerous and better appointed corps of cavalry than any European power in India ever brought into action."

The strength of the armies in round numbers amounted to—

1. Carnatic Army, 20,000 men, including 4,300 Europeans and 2,600 Cavalry.
2. Cannanore Army, 6,400, including 1,600 Europeans.
3. Nizam's Army, 6,500 British and 10,000 Native troops.

The brunt of the fighting in this, as in other military enterprises during the conquest of India, fell on the British troops. They took the posts of danger on all occasions, headed forlorn hopes, and generally led the Native troops into action, these latter frequently having a company of a British corps placed at the head of each regiment to supply them with that *elan* in which they were deficient.

Sometimes the sepoys fought well, but there is no reason to suppose that the sepoy of the Carnatic Army was any better than in our own time, except that there were more Musalmans in the ranks. The Muhammadans of Southern India were good fighting men, and when we find the names of natives mentioned for enterprise and gallantry in the records of a century ago, such are always the names of followers of the Prophet. The Tamils and Telingas, as in our day, were obedient and disciplined, but timid and unenterprising. The Pariahs, on the contrary, were then, as now, keen, intelligent and brave.

Of the Nizam's Army the Governor-General wrote to the Court of Directors in March 1799 :—"This force under the general command of Meer Allum formed a junction with the army on the 19th February;

The Nizam's Contingent.

and it is with the greatest satisfaction that I remark to your Honourable Court the beneficial effects which the Company have already derived from the recent improvements of an alliance with the Court of Hyderabad. The Nizam's Contingent actually arrived in the vicinity of Chittur in a state of preparation for the field, before General Harris was ready to proceed on his march from Vellore." Some trouble was, however, experienced with the infantry, who objected to the appointment to them of European officers, and declared that if this measure were adopted they would march back to Hyderabad with all their arms and ammunition. It is related that "the alarming intelligence was brought to Malcolm at midnight; before daybreak he waited on Mir Alam and urged upon him, in the strongest terms, the necessity of peremptorily ordering the guns and magazines to be sent forward under the protection of one regiment, and to direct the others to march onward in the usual manner. The orders were sent, but the regiments hesitated. So the Nizam's Cavalry were drawn up on the flank of the infantry line, whilst Colonel Roberts' corps (the Subsidiary Force) took up a position which could have reduced the recusants had it been necessary to proceed to extremities. Still there was procrastination. Some of the Native leaders were eager to delay the settlement until evening. So Malcolm conceived that the time had come for the abandonment of all delicacy and reserve, and for a direct personal interference, such as, he said, under less

pressing circumstances he might not have been warranted in exercising. He offered his services to Mir Alam; said that he was ready to carry the Minister's orders into immediate execution, and, on receiving a full consent to the proposal, mounted his horse and rode into the lines of the mutinous battalions.

His determined bearing had the desired effect. He ordered the sepoys to fall in, and they obeyed. He directed one regiment to march forward with the guns and the stores, and the others to march in the order determined; and his commands were not resisted. We are told that the sepoys of the French corps were taller and stouter than those of the Company on the coast, a superiority maintained by the Hyderabad Contingent, which was subsequently evolved from these and other troops in the Nizam's Army. Malcolm took command of the infantry, 3,621 in number, and organised them into battalions commanded by British officers, and two troops of the Nizam's Cavalry, clothed, accoutred and disciplined in the same manner as the Company's regiments were attached to his command. The Cavalry under Mir Alam amounted to some 6,000.

The Roman word *impedimenta* is certainly more expressive than 'baggage,' for the baggage is surely the greatest impediment to the mobility of an army. This was particularly the case during the wars of the first half of the last century, when officers appear to have been allowed an unlimited quantity of impedimenta. The camp followers of the armies in India also added to the incumbrance of supply and transport. With General Harris' army of 35,000 fighting men there were 120,000 followers, a number that was exceeded in the Maratha War of 1817, when the Marquis of Hastings had a fighting force of 110,000 men, with 500,000 camp followers.

Supplies were in those days drawn from different parts of the country and collected by *Banjaras*, who carried their goods on pack bullocks, of which they possessed immense numbers. In the Wellington Despatches we find frequent mention of these nomadic supply agents, of whom Wellesley wrote in 1804: "These are a class of carriers who gain a livelihood by transporting grain or other commodities from one part of the country to another. They attend armies and trade in nearly the same manner as they do in common times of peace. They either purchase grain themselves in the country with their own money, or with money advanced to them by the Company, and sell it to the bazar at the rates of the day on their own account, or they take grain at the Company's stores at certain reduced rates, and sell it on their own account in the bazars; or they take up grain in the Company's stores and carry it with the army, and receive a sum of money for every march they make; or they hire their cattle by the month to the Company." Immense numbers of Banjara cattle accompanied the army in the field; and we read in one place of a single convoy of 14,000 of these animals.

Supply and Transport.

The Banjaras.

To oppose the British army the Sultan had a force of some

The Sultan Army.

76,000 men, well armed and equipped, and composed of the following: Regular Cavalry, 6,000; Irregular Cavalry, 7,000; Guards (slaves) 4,000; Regular Infantry, 30,000; Pikemen, 15,000; Carnatic Peons, 8,000; Pioneers, 6,000; these numbers include the gunners and gun-lascars. Each regiment of regular horse had two 3-pounder galloper guns, and each irregular *visala* had three 6-pounders; these were drawn by mules. Each infantry brigade had two 18-pounders. Each brigade had an elephant attached to it, to assist the guns through difficulties. The cavalry and infantry were clothed alike in a striped blue and white stuff of country manufacture. The artillery was clothed in white cotton with large round blue spots. The pay of the regular cavalry troopers, whose horses were furnished by the State, was rupees twelve monthly. The Muhammadan silladars of the irregular cavalry received rupees forty-five and the Hindus forty monthly, having to provide and maintain their own horses.

They were also entitled to half plunder. The pay of the infantry was divided into three classes, who received respectively rupees ten, eight and a half, and seven monthly. The French auxiliaries were paid by contract; Lally, as commandant, two thousand rupees; five hundred for each gun; twelve pagodas* for an elephant; for a European horseman, ninety rupees; a foot soldier, thirty; half-castes, twenty; sepoy, sixteen. Under this contract the French commandant was obliged to pay his officers, mount and maintain his cavalry, find clothes and arms for the infantry, and provide bullocks to draw the guns.

NOTE.—The Banjaras deserve more than a passing notice, for they acted a large part in the operations of war. They are commonly supposed to be identical with the gipsies of Europe. Their origin is shrouded in mystery. The name is by some derived from the Sanscrit *Banij*, a merchant. They are indicated by Arrian as one of the classes of Indian society. They are met with in wandering encampments from the Himalayas to Southern India, whilst there are also some settled communities in Rohilkhand and in other parts of the country. There was at one time a colony of these people in the vicinity of the ruined city of Mahoba in the North-West Provinces, where they dwelt in substantial stone houses, but they have long since disappeared. In the Deccan I have found them in small settled communities, but they are almost entirely nomadic, seldom occupying their temporary hamlets for any extended period. The following from Wilks' *History of Mysore* is interesting: "Much has been conjectured and little ascertained regarding this extraordinary class of men, whose habits and history were at that period (1792) entirely unknown to the English army. Every man and many of the women were armed with a great variety of weapons, and although moving with their whole train of women and children, who would scarcely be classed among the impediments, proved themselves capable, in several instances, not only of military defence, but of military enterprise, as was particularly evinced in the assault and plunder of the lower part of Calal Droog." After a discussion with an assembly of chiefs regarding their descent, and pressing for some traditional account of their original country or home, "That is our country," said the eldest of them, pointing to the tent which covered his grain bags, "and wherever it is pitched is our home; my ancestors never told me of any other." Wilks, who wrote a hundred years ago, adds,—"After a war, in which of course many of their cattle are destroyed, they seek for some forest inhabited only by tigers, worthless to its Government, and the terror of the neighbourhood, which they obtain permission to occupy, and enter it fearlessly, waging war with

* Pagodas varied in value: these were probably the equivalent of Star Pagodas, equal to three and a half rupees.

its former inhabitants until it becomes a safe nursery for the increase of its herds.' Since the days of Muhammad bin Tughlak in 1340, the Banjaras have figured as the suppliers of armies in all campaigns in India. They are still to be found with their droves of pack bullocks employed as carriers in the remoter parts of the country. But with the spread of railways and improvement of other means of communication their occupation has almost gone, and they are fast disappearing or settling down. Twenty years ago the total number in India amounted to some 384,000 distributed as follows:—Berar, 60,000; Bombay, 15,000; Central Provinces, 52,000; Madras, 22,000; North-West Provinces, 42,000; Punjab, 60,000; Hyderabad, 91,000; Mysore, 31,000. Their encampments, with the women dressed in picturesque particoloured skirts and a profusion of ornaments, are doubtless known to all who have wandered about the wilder parts of the country.

I think that, enlisted in class regiments under their own Naiks, they might make good irregular soldiers. They are generally of fine physique, manly, plucky, and in their own tribal organisation are accustomed to the strict discipline of their Naiks. They possess moreover, more intelligence than many of the tribes and castes of India where there are so few warlike people, whilst their nomadic habits of life render them in many respects peculiarly fitted for military service. In the Deccan I have everywhere found the Banjaras among the best of shikaries, and have always been glad to have them when beating for dangerous game, when they are plucky and trustworthy. They are themselves much addicted to the chase, assisted by their fierce breed of dogs, with which, and armed with spears, they hunt down their game. In my wanderings in the jungles in search of big game, I have often had considerable assistance from the Banjaras. The haunts of tigers are frequently known to them, owing to the depredations committed by these animals upon their herds, and sometimes upon themselves, and they are always glad to assist in bringing the great beasts of prey to bag. In this respect they are not secretive as to the presence of wild beasts, as are the generality of villagers in the Deccan, who almost invariably display a remarkable reluctance in giving any information regarding tigers and panthers, although these animals may be carrying on considerable depredations on their live stock. The Banjaras are also remarkably truthful, a virtue to which the mild Hindu is not generally addicted. In beating for tigers I have always been glad to get a Banjara Naik and his following; they can be trusted as 'stops,' and relied upon to beat the jungle thoroughly and not miss out dense patches of bush where the beast might be lurking. I recollect how one great tiger, trying to break out of the beat, rushed up the side of a ravine, scattering the beaters in all directions; but a Banjara Naik was fortunately close by with some of his men, and seeing that the tiger would escape he led them in a charge against the beast, uttering fierce shouts, and drove him grumbling down the slope again. Such incidents might be multiplied, and in all my excursions in pursuit of big game this fine and manly race has figured largely.

There were about 120 French at Seringapatam, and about a hundred men, under Messieurs Dubuc and Chapuy, came over from Isle of France (Mauritius) in the frigate 'La Preneuse,' and landed at Mangalore on 26th April 1798. There are no French names in the list of Tipu's officers who were killed at the Siege of Seringapatam.

Tipu Sultan, commonly known as the Tiger of Mysore, from the ferocity of his character, is generally represented as a monster in human form. He must, however, not be judged by European standards but by the character of the age and country in which he lived. He had a great hatred of the British, which is not surprising in view of their attitude, which placed the existence of his state in a precarious position. This enmity was vented on the unfortunate prisoners who fell into his hands, many of whom were murdered after long confinement in the dungeons of Seringapatam, whilst others were hurled from the Tiger Rock to serve as food for vultures and jackals in the plain below.

He was fanatical and arrogant, and although of good business habits, and a prolific writer, he did not possess the military genius

of his father Haidar Ali. Born in 1753, he is described as being, in 1799, of low stature, corpulent, with high shoulders, and a short thick neck; but his feet and hands were remarkably small. His complexion was rather dark, his eyes large and prominent, with small arched eyebrows, and an aquiline nose. He had an appearance of dignity, or rather sternness, in his countenance, which distinguished him above the common order of his people. Not only was his nature comparable to that of the tiger, but that great animal constituted the symbol of his state. His flag was a large square of light green, with a blazing sun in the centre, set off with the tiger streak on the sides and angles. His cipher represented a tiger's face, and his throne was thickly sculptured with the same device. A number of tigers were found chained in the courtyard of his palace, and had to be destroyed after the capture of Seringapatam.

The Carnatic Army marched from Vellore on February 11th, and on the 18th effected a junction with the Nizam's Cavalry under Mir Alam at Killamangalam, but was there delayed, principally by difficulties connected with the transport and siege train, until the 9th March, whilst a force of some 5,000 men under Colonel Read was detached to protect the frontier of Baramahal, to collect provisions, and ultimately to co-operate with another force under Colonel Brown, which had been assembled near Trichinopoly, and was about to march on Seringapatam by Karur, Erod, and Kaveripuram.

Meanwhile General Stuart, with the Bombay Army, had left Cannanore on the 21st February; and on the 2nd March encamped on the Coorg Frontier, the advanced brigade of some 2,000 men composed of three native battalions under Colonel Montresor being at Sideshwar, and the main body eight to twelve miles in rear at Sidapur and Amuntannur. This somewhat dangerous division of his force by General Stuart was rendered unavoidable by the enclosed nature of the country which was covered with jungle, and afforded little space to encamp. The occupation of Sideshwar was necessary as it commanded a view of the Mysore country almost up to the gates of Seringapatam, and enabled the Cannanore Army to obtain communication with the Carnatic Army as soon as the advanced piquets of the latter appeared.

On the 28th February, Tipu Sultan marched from his camp at Chenapatam to oppose the advance of the Bombay Army, and arrived at Periapatam, within striking distance of General Stuart's advanced brigade, on the 5th March, where their presence was discovered, whereupon the British General sent another battalion to reinforce Colonel Montresor. On the morning of the 6th March, Tipu advanced by jungle pathways into Coorg, and surrounding the British advanced force, which was only 2,000 strong, with his army of 11,800 men, he attacked them unexpectedly on every side. There seems little doubt that the British would have been totally destroyed, had not General Stuart sent a reinforcement of the 75th and 77th Regiments who turned

Battle of Sideshwar.

the tide of battle, and by two o'clock the Mysore Army was put to flight with a loss of some 1,500 killed and wounded, including several officers of high rank. The British loss amounted to, Europeans, 9 killed, 21 wounded, 4 missing; natives, 22 killed, 77 wounded, 12 missing.

Tipu wrote the following somewhat inaccurate account of this action: "On Wednesday, the 30th or last day of the month of Razi of the year Shadeb 1226 from the birth of Muhammad, corresponding with the 29th of Ramzan (when the moon is not visible) 1213 Hegira or 6th of March, 1799, the victorious army of the Sultan having left their baggage at Periapatam, and formed themselves into three divisions, or detachments, entered the forests of Coorg by three different roads, where the army of the Christians had taken post, and, advancing, gave battle, fighting with fire locks and spears, and the whole army of infidels was routed; some of the Christians taking to flight.

"In that battle Muhammad Reza and Muhammad Miran devoted themselves and drank the cup of martyrdom; Mirza Bakar Bakshi and Muhammad Jahangir Bakshi became martyrs; and Moazim Khan Bakshi was wounded and taken prisoner by the Christians; and Ghulam Mohiuddin devoted himself a martyr."

Repulsed at Sideshwar, Tipu returned to Seringapatam, and thence advanced to oppose General Harris, who left Kelaman-galam on the morning of March 10th, and marched by the route taken by Cornwallis in 1792, by way of Anikal, Talghatpuram, and Kankaneli to Seringapatam. Parties of the enemy's horse were engaged in destroying villages and forage, and some of these attacked a company of sepoy's belonging to the rearguard of the Nizam's Contingent, killing 20, wounding Lieutenant Reynolds and 36 men, while the remaining 9 were missing. On the 14th the army encamped near Bangalore, and on the 16th moved forward by Talghatpuram and Kankaneli, a route by which Tipu had not expected them. The march was consequently unopposed, whilst supplies were plentiful, as these had not been destroyed along the Kankaneli road.

On the 26th March, General Harris' army encamped five miles east of Mallavelly, on open and commanding ground from which some of the enemy's troops, with guns and elephants, could be seen on a ridge beyond the town. Next morning, the army marched at daybreak on the great road to Mallavelly, the Nizam's Contingent covering the left flank and baggage, while the piquets and five regiments of Cavalry under Major-General Floyd covered the advance. On approaching Mallavelly the enemy was found occupying some ridges, his cavalry on the right flank, and his infantry on the heights beyond the town. Lieutenant-Colonel Alexander Beatson, who was present, gave the following account of the action that ensued:—"The five regiments of cavalry were ordered to form to the left of the road and to support Colonel Wellesley's division, which was directed to attack the

Combat of Mallavelly.

enemy's right flank, whilst the piquets, under Colonel Sherbrooke, supported by the right wing of the army, under Major-General Bridges, were to penetrate through the village of Mallavelly, towards the centre of the enemy's line, and Major-General Popham, with the left wing and the rearguard, was to remain at the fort and village of Mallavelly, for the protection of the battering train and baggage of the army. As soon as the enemy perceived Colonel Wellesley's division in motion, their guns were drawn off to a ridge beyond that which they at first occupied. Here their main body of infantry drew up, but at so great a distance that it was imagined they were about to retire. General Harris, who had led the piquets and the right wing in person, arrived at the fort of Mallavelly; and Lieutenant-Colonel Richardson, the Quarter-Master-General, having advanced to reconnoitre the ground on the western side of the fort, now waited for instructions. As the enemy waited at so great a distance, the General directed him to mark out the new encampment; and he proceeded for this purpose, supported by the piquets under Colonel Sherbrooke, which were now reinforced by the 25th Light Dragoons and the 2nd Native Cavalry; but scarcely was the new ground marked out when twelve or fourteen guns opened from different parts of the enemy's line at the distance of two thousand yards. They soon got the range and did some execution. After the encampment had been marked out, Colonel Sherbrooke pushed forward to a village in front of the enemy's left, from which he drove off a party of their horse and rocket-men. Here the 25th Dragoons, under the command of Colonel Cotton, maintained their position, and kept in check a body of the enemy's horse which hovered on our right flank. The piquets being now the most advanced towards the enemy were considerably annoyed by the cannonade and the rockets. Colonel Sherbrooke had judiciously posted them with his right to the village, and, the cannonade still continuing, the 5th, or leading brigade, under Colonel Roberts, was ordered to advance and form upon his left; the 1st or European Brigade, under Major-General Baird, to form on the left of the 5th, and the 3rd on that of the 1st. In the meantime the division under Colonel Wellesley advanced in echelon of battalions, supported by Major-General Floyd with the three remaining regiments of cavalry. The line thus formed moved slowly to give time for the whole to act together. The enemy's cannonade was answered by such of the field pieces as could be brought up; and the action soon became general along the whole front. It was, however, of short duration: for although some corps of the enemy's infantry and horse exhibited the strongest proofs of courage, it was impossible to withstand the determined valour and steadiness of our troops. A column of the enemy, consisting of about 2,000 men, moved forward in excellent order towards His Majesty's 33rd Regiment; this corps reserving its fire with the utmost steadiness, received that of the enemy at the distance of sixty yards, and continuing to advance, the column gave way and was thrown into disorder. At this instant

Major-General Floyd, making a rapid charge, completed the route with great slaughter."

After his defeat at Mallavelly, Tipu retired on Seringapatam, hoping to keep that stronghold against the attacks of his enemies. The British army continued its march unmolested, and on the 2nd April took up a position about two miles from the western face of the fortress, having the right resting on a height and the extreme left on the river Canvery. In front there were some ruined villages, and an aqueduct running in an easterly direction to within 1,700 yards of the fort, and winding towards the right until it reached a grove of trees called Sultanpeth. In this broken ground the enemy's skirmishers and rocket-men found a safe cover whence they could harass the advanced piquets of the British army. On the morning of the 5th the enemy occupied the grove and ruined village, from which they discharged rockets into the British encampment, and kept up an annoying fusillade. It was consequently decided to clear this ground by a night attack, which was made by Colonel Wellesley with the 33rd Regiment and a battalion of Bengal Infantry on the grove of trees, and by the 12th Regiment and two battalions of Madras Infantry under Colonel Shaw on the ruined village. The latter occupied the village, the attack on the grove was opposed by a tremendous fire of rockets and musketry, and an advance through the darkness of the night over ground broken and intersected by canals was found impracticable. The force consequently retired; twelve grenadiers of the 33rd lost their way and were captured, while Colonel Wellesley wandered about for some hours before he could find his way back to camp. Next morning the enemy was driven out and the position occupied by Colonel Wellesley without difficulty.

It is interesting to note that General Harris wrote in his diary, in commenting on the difficulty of finding one's way at night, "no wonder night attacks so often fail," a truth we have seen again exemplified in most recent times. The twelve unfortunate soldiers who fell into the enemy's hand were cruelly murdered "by threes," some by having nails driven into their heads, while others had their necks broken by Chettys, a caste who perform feats of strength.

The enemy was thus driven from the outward line of defensive posts, two miles in extent, reaching from the grove of trees to the river, and forced to take refuge within the walls of the fortress, of which the following description is given by Beatson: "The island of Seringapatam is three and a half miles in length, and a mile and a half in breadth. It is formed by the river Cauvery, and rises considerably in the middle, from which there is a gradual slope towards the river. The fortress occupies two thousand yards of the west extremity of this island, and is a place of great strength. Covered upon the north and west by the Cauvery, it was defended until the peace of 1792 by a single rampart; the east and west faces

Description of Seringapatam.

being considered weaker, were strengthened by double walls and ditches, by outworks before the gates, by a strong circular work upon the south-east angle, and by several formidable cavaliers within, and upon the southern rampart. Perhaps no place of the same extent of fortification ever required so much labour in its construction. The rampart, which is thick and strong, varies in height from twenty to thirty-five feet and upwards; the whole of the revetment, except the north-west bastion, is composed of granite, cut in large oblong pieces, laid in cement, transversely in the walls. The ditches are excavated in solid rock; a stone glacis extends along the north face, more with a view of making the outer part of the ditch than of covering the walls. The western ditch has not been constructed with much less labour: it is formed by a strong mound, or wall, of considerable thickness, parallel to the rampart, and entirely built of stone."

The British army took up a position to attack the north-west angle of the fort. Batteries were established to bring a cross-fire to bear on this point, and the approach to the fortress was made by construction of zig-zag trenches.

The investment will be best understood from the accompanying sketch. The Bombay army effected a junction with General Harris' force on the 10th April. The course of the siege was generally uneventful until the 22nd, when a sortie was made by some 6,000 of the enemy's infantry and Lally's corps of Frenchmen, but they were driven back with a loss of six or seven hundred killed, and wounded. Tipu twice sent letters to General Harris, with a view to opening negotiations, but he would not accept the terms, which involved the surrender of half his territory, the payment of a large indemnity and the delivery of a number of hostages. Subsequently all the enemy's posts were driven in, principally by attacks carried out by parties of the 74th Regiment, and, by the end of April, breaching batteries were established, which in the course of a few days made a practicable breach in the bastion, and by the 3rd May all was ready for the assault.

Before daybreak on the morning of May 4th the troops destined for the assault on Seringapatam were assembled in the trenches. They amounted to 2,494 Europeans and 1,882 native infantry, under command of Major-General Baird,* and were divided into two parties; the right column, under Colonel Sherbrooke, consisted of flank companies of the Scotch Brigade, the Regiment de Meuron, the 73rd and 74th Regiments, eight flank companies of Madras and six of Bombay

* David Baird was one of the officers captured in the war with Hyder Ali in 1780, when he was imprisoned for four years at Seringapatam. He was apparently a man of somewhat peculiar temper, if the story is true that, when his mother heard that the prisoners of Hyder were chained in twos, she exclaimed "I pity the man who is chained to our Davie." He distinguished himself in many campaigns; was made a K. C. B., and subsequently a baronet. At the Battle of Corunna he had his left arm shattered by a cannon-ball. He died in 1829.

sepoys, and fifty artillerymen, who were destined to attack the southern rampart. The left column, under Colonel Dunlop, was composed of six European flank companies from the Bombay army the 12th and 33rd Regiments, ten flank companies of Bengal sepoy, and fifty artillerymen, and was directed to assault the northern face. Each column was headed by a forlorn hope of a sergeant and 12 men, one of the 74th and the other of the 77th, followed by two subalterns' parties commanded by Lieutenants Hills, 74th, and Lawrence, 77th Regiment. The assault took place not long after midday, and in six minutes the breach was won and the British flag waved on the rampart. But on arrival at the top of the breach, General Baird discovered a second ditch, full of water, within the outer wall, which appeared impassable. Leading his men along the ramparts, however, he found that some scaffolding had been left by workmen who had been engaged in repairing the wall, and by this means the troops crossed the inner ditch; the two columns joined on the other side of the fort, and entered the body of the town. The firing continued until a little after two o'clock, by which time the whole of the works were in possession of the troops, and the British ensign floated from the flagstaff on the southern cavalier of the fort.

Meanwhile the final act of the drama was being played out at a covered gateway of the town, where the Tiger of Mysore was himself making a last stand. During the earlier part of the assault, the Sultan remained in his palace, where he received news from time to time of the progress of the fight. At length he was told that the British columns were crossing the river, and the news was confirmed by the roar of guns and musketry which he heard, like Brunswick's fated chieftain at Waterloo, "with death's prophetic ear."

Mounting his horse he rode forth, never to return, reached the inner ramparts, and took up a position behind a traverse commanding the approaches from the breach, where he fired repeatedly at the assailants with deadly effect. But he was obliged to retire, accompanied by a few personal attendants, when the storming party entered the body of the place. "Fatigued, suffering from intense heat, and pained by an old wound, Tipu mounted his horse and retreated slowly along the northern rampart. The British were momentarily gaining ground, the garrison in every direction flying, while a spattering fusillade, and occasionally a wild huzza, told that the victors were everywhere advancing. Instead of quitting the city, as he might have done, the Sultan crossed the bridge over the inner ditch, and entered the town. The covered gateway was now crowded with fugitives vainly endeavouring to escape from the bayonets of their conquerors, who were heard approaching at either side. A random shot struck the Sultan: he pressed his horse forward, but his passage was impeded by a mob of runaways, who literally choked the archway. Presently a cross-fire opened, and filled the passage with the dead and wounded. Tipu's

horse was killed, but his followers managed to disengage him, dragged him exhausted from beneath the fallen steed, and placed him in his palanquin. But escape was impossible: the British were already in the gateway; the bayonet was unsparingly at work, for quarter at this moment was neither given nor expected. Dazzled by the glittering of his jewelled turban, a soldier dashed forward and caught the Sultan's sword-belt. With failing strength Tipu cut boldly at his assailant, and inflicted a trifling wound. The soldier, irritated by pain, drew back, laid his musket to his shoulder, and shot the Sultan dead. His companions, perceiving the struggle, rushed up; the palanquin was overturned, the body of the departed tyrant thrown upon a heap of dead and dying, and the corpse, despoiled of everything valuable, * left among the fallen Musalmans—naked, unknown and unregarded."

Here the body was subsequently discovered by General Baird, Colonel Wellesley, and others. There was a bullet-wound a little above the right ear, the ball lodging in the left cheek near the mouth; and there were three bayonet wounds in the right side. The corpse was handed over to the Muhammadans, who buried it beside the remains of his father, Haidar Ali; and the evening on which the tomb closed over the departed Sultan was marked by a thunderstorm of remarkable violence.

No further resistance was experienced, and the town [palace, and

Casualties.

a fort were occupied by the British troops. From a return made out by one of Tipu Sultan's officers it appears that on the 4th of May during the assault there were in the fort 13,739 regular infantry, and outside in the intrenchments on the island, 8,100. The total loss during the siege was not ascertained, but some 8,000 were killed in the final assault.

The British casualties amounted to 22 officers killed and 45 wounded; 181 European rank and file killed, 622 wounded, and 22 missing; 119 natives were killed, 420 wounded, and 100 missing.

The following is a list of officers killed or mortally wounded during the operations:—

Major C. Campbell, 1st Battalion, 1st Regiment, Native Infantry.
 Lieutenant G. Nixon, His Majesty's 12th Regiment.
 Lieutenant T. Falla,
 Lieutenant Fitzgerald, H. M. 33rd Regiment.
 Captain A. Torriano, Bombay Artillery.
 Lieutenant W. McRedie, Bombay Artillery.
 Assistant Surgeon Glasser, Regiment de Meuron.
 Lieutenant J. Fish, 2nd Battalion, 3rd Madras Infantry.
 Captain J. C. Meares, 1st Battalion, 2nd Bombay Infantry.
 Captain Hay, Scotch Brigade.

* Note.—When the Sultan left the palace he was dressed in a light coloured jacket, wide trousers of fine coloured silk, a sash of dark red silky stuff, and a turban with one or two distinguishing ornaments. He wore his sword in a rich belt slung over his shoulder, and a small cartridge-box, hung to another embroidered belt thrown over his left shoulder; the talisman was fastened under his jacket on his right arm.

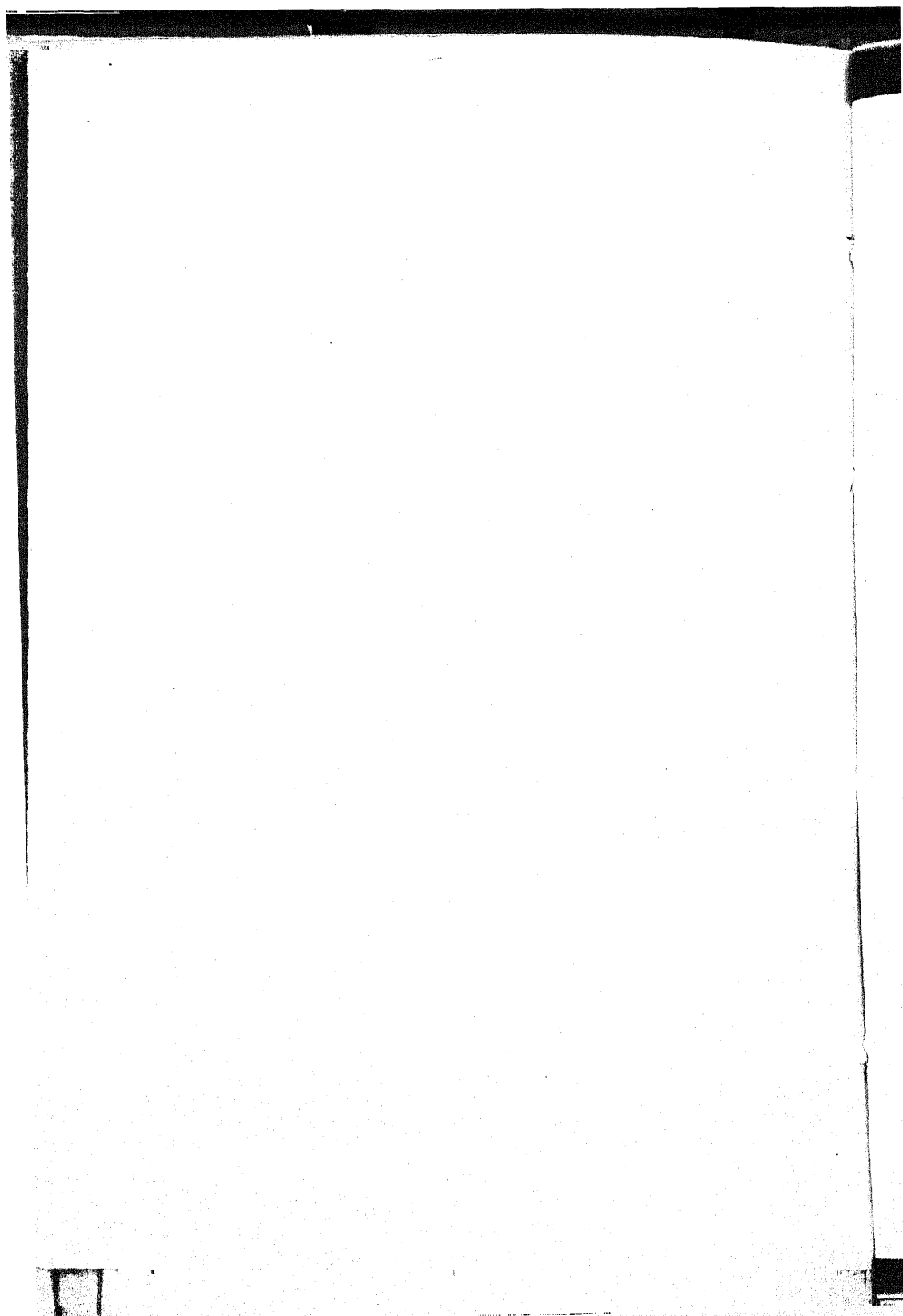
Lieutenant Irvine, His Majesty's 74th Regiment
Lieutenant-Colonel Montague, Bengal Artillery.
Lieutenant Cookesley, Madras Artillery.
Captain Cosby, Staff.
Captain Jourdan, Madras Artillery.
Lieutenant Lalor, His Majesty's 73rd Regiment.
Lieutenant Farquhar, His Majesty's 74th Regiment.
Lieutenant Prendergast, His Majesty's 74th Regiment.
Lieutenant Hill, His Majesty's 74th Regiment.
Lieutenant Shaw, His Majesty's 74th Regiment.
Lieutenant Mather, His Majesty's 74th Regiment.
Captain Owen, His Majesty's 77th Regiment.
Lieutenant Mathey, Regiment de Meuron.
Lieutenant Cormick, Madras Pioneers.

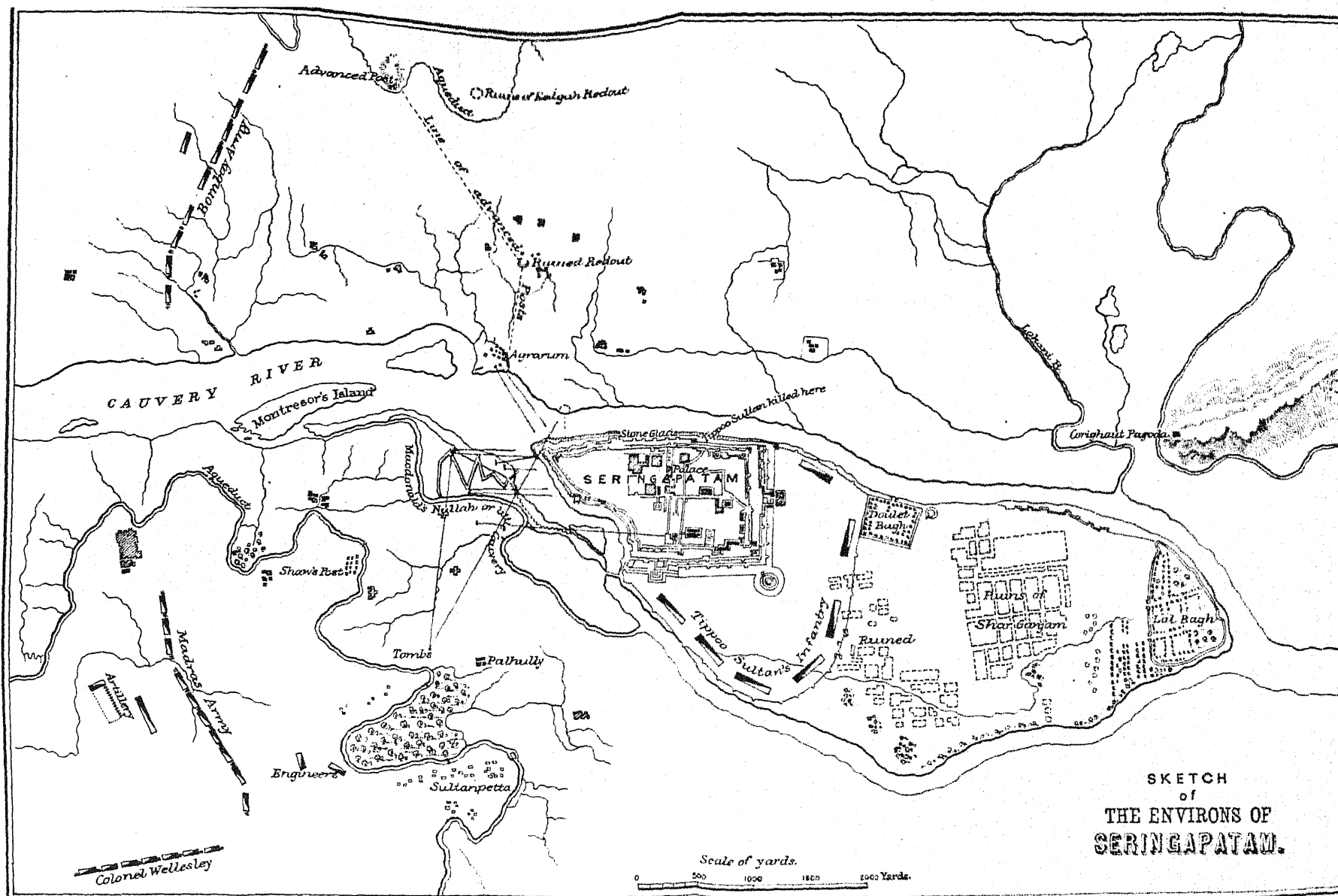
Immense treasure was found in the palace, but the troops broke in at the back and looted the greater part of it; valuable jewels were afterwards purchased for a few rupees. Dr. Mein purchased from a private of the 74th Regiment for a mere trifle two pairs of solid gold bracelets set with diamonds, the least valuable of which was valued by a Hyderabad jeweller at £32,000, and the most valuable pearls were frequently bought from the soldiers for a bottle of spirits. Marauding continued next day, when it was sternly repressed by Colonel Wellesley, who had been appointed Governor of the place, had four men hanged, and so put a stop to the disorder.

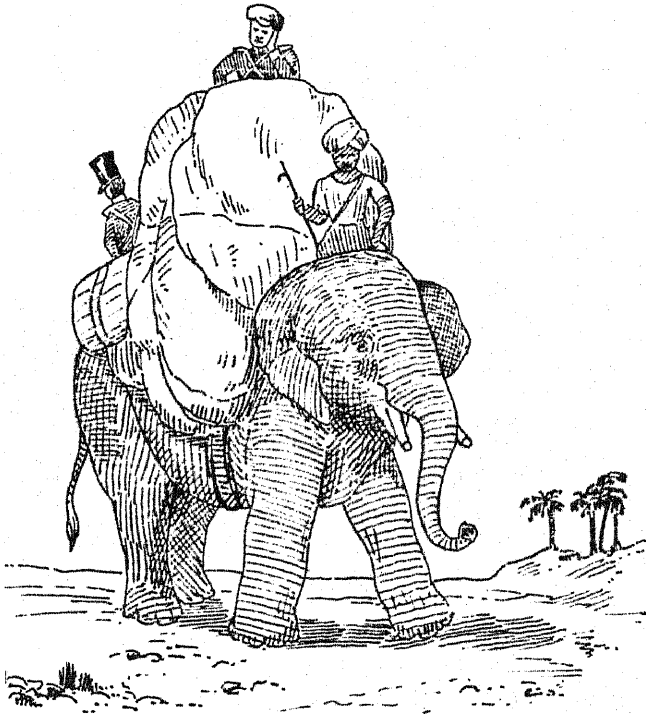
The Sultan's children were removed to the fort of Vellore* and the old Hindu family restored to the *masnad* from which they had been deposed by the usurpation of Haidar Ali.

The consequences of the campaign were of great political importance. Lord Mornington wrote on this subject to the Court of Directors: "The fall of Seringapatam, under all the circumstances which accompanied that event, has placed the whole kingdom of Mysore, with all its resources, at the disposal of your Government; and the only power in India to which the French could look for assistance, or which could be deemed formidable to your interests, is now deprived of all vigour, if not entirely extinct."

* For an account of the Mutiny at Vellore instigated by the Mysore princes and their adherents in 1806 see "*Gillespie of Comber*"—Journal of the United Service Institution of India—January 1905.







Baggage on the March, 1799.
From an old print.

A PLEA FOR THE SILLADAR

CAPTAIN E. TENNANT, XX DECCAN HORSE

At the commencement of last cold weather a pamphlet was very widely circulated in military circles professing to give a general connected idea of what is to be said, for and against, the two systems in the Indian Cavalry (the silladar and the non-silladar).

Appearing originally as a series of letters in the "Pioneer" and the "Madras Mail," it may be taken for granted that a very large proportion of the readers of those letters were not sufficiently well informed to enable them to verify the accuracy of the statements and assumptions therein made, and as the whole question has since been allowed to drop, they will, not unnaturally, retain an impression that the disadvantages of the silladar system greatly outweigh its advantages.

There is not the least doubt that this impression has taken root, and so I think it only fair to the silladar to put everyone in full possession of the facts and then let them judge for themselves. A little knowledge is a dangerous thing, but a little knowledge coupled with biassed opinions is more dangerous still.

I trust that no one will consider it presumption on my part in taking upon myself the responsibility of answering the charges that have been made against the silladar cavalry, but being quartered in the same garrison with one of the non-silladar regiments I have, possibly, exceptional opportunities for comparing the working of the two systems. I have deferred doing so as long as possible in the hope that some more able and more experienced pen would undertake the work, but any further delay seems inadvisable as changes may be introduced at any moment, and it will then be too late. Already a rumour has travelled the length and breadth of India that Government seriously contemplated buying in all silladar horses and taking over the chunda funds, and actually would have done so had not the estimated cost been too heavy. Whether this rumour contained any grain of truth or not is beyond the point, but it is a warning to those who believe in the silladar system that they will do well not to disregard.

I think that one reason for so little notice having been taken by silladar officers of the articles in the "Madras Mail" already referred to, is that we all know our system to be a good one, and that its advantages so enormously outweigh any that can be claimed for the non-silladar system, that it is not worth while going to the trouble of demonstrating the fact. However, I think this is a mistake, as the Indian silladar system is not an easy one for anyone unacquainted with its working to understand fully. No two regiments are worked on identically the same lines, that is to say, their

rates of subscription to the various funds and heads of account are different: some have saddle chundas and others do not, and in many similar ways details differ, so much so, that before any changes are introduced the matter should be first thoroughly investigated by a representative committee of silladar officers.

In the pamphlet under review the writer (on page 5) under the heading "Supplies" says that silladar regiments "are not altogether independent of Government supply during peace" as—

- (1) they obtain compensation for dearness of grain;
- (2) they obtain considerable sums for grass farms, and lands are set apart for them.

As regards (1) I fail to see the argument. The supplies are not obtained from Government, and the compensation referred to is merely an acknowledgment on the part of Government that the conditions have changed since the time when the terms of the original contract were drawn up, that is to say, that the expenses of the sowar have increased without any corresponding increase in his pay.

If Government had increased the sowar's pay by Rs. 2 a month instead of granting him compensation, would that have vitiated the silladar principle? Instead of raising his pay *directly* however, they (doubtless for very good reasons) did so *indirectly*; but that in no way curtails his independence.

With reference to (2) the way in which grass is obtained in the regiments with which I have acquaintance is as follows:—

The leases of certain tracts of grass-land (the property of private individuals), generally hilly country where crops cannot be sown, are put up for public auction every four or five years; anyone can bid for these grass-lands, and the owners take very good care that the prices at which they are knocked down are not too low.

That regiments are able to outbid the ordinary purchaser is due to the fact that they can cut and bring in the grass cheaper than any one else, owing to their having grass mules and syces, and also that there are no middlemen's profits to be taken into account.

Another misleading description appears under the heading of "Transport"—the two passages I particularly refer to are as follows:—"Government helps to maintain this transport (*i.e.*, the silladar's) by making a loan of between 80 and 90 mules to each regiment"., and "On service it would appear to be an easy matter to furnish the transport required for a regular regiment from existing mule corps." Government does not help to maintain this transport any more than it can be said that silladar regiments help to maintain Government transport—it is a *quid pro quo*. All that Government does is to save regiments the purchase price of 89 transport animals apiece, in return for which regiments save Government the cost of feeding, stabling, and looking after these mules, as well as the purchase and maintenance of their line gear during times of peace, at the same time guaranteeing to hand them over to Government in good working condition the moment they are asked for.

But this is a trifle compared with the statement that it would be "an easy matter to furnish the transport required for a regular regiment from existing mule corps." Why, the transport maintained by mule corps is insufficient for the carrying out of ordinary garrison duties in times of peace, as can be shown by the number of bills that are submitted for hired transport.

It is notorious that even in small frontier campaigns the matter of transport animals is a serious difficulty, and what does the writer imagine that "Transport Enumeration Officers" are employed for if the existing mule corps can provide transport sufficient for all requirements?

But to continue—a little further on we find a special chapter devoted to the remount question, in which the silladar system of purchasing remounts is compared with that of Government, and I venture to think that everything points to the advantages of the former. A remount for the non-silladar regiments costs Government, according to the Annual Report of the Remount Department, 1903-04 an average of Rs. 800 before it is finally handed over to the regiment, although its actual price in Madras or Bombay is only Rs. 400, hence it is obvious that the Government system is a costly one. In addition to this the services of the remount officers and staff are entirely lost to their regiments. But in order to become expert judges of what are and what are not likely to make good troop horses, where did these same remount officers gain their experience? I shall take my reply verbatim from the pamphlet—"Remount officers, as an almost invariable rule, are selected from silladar regiments because of their special qualifications." And again in another place he says—"To expect every silladar regiment to produce an expert in horse buying is to expect the impossible. A high price must invariably be paid for experience in almost every branch of every profession."

Permit me to remind the writer that the money expended upon experience in this instance has all come out of the poor *silladar's* pocket and the benefit of it is reaped by the "regular cavalry." While on the remount question it may be as well to dispose of the fallacy that non-silladar regiments are better off in the matter of a "war-reserve" of horses than the silladar.

The silladar regiment goes on service 500 strong, leaving 125 horses behind as a reserve. If Government would give the silladar the same pay that it gives to the non-silladar I feel convinced that at least 90 per cent of these 125 horses would be fit to take the field the moment they were required. Of course, it will be said that the silladar already receives higher pay than the non-silladar, but later on I shall conclusively demonstrate that he actually receives at least Rs. 4 per mensem less.

Now let us compare this with the non-silladar system.

The peace establishment of horses of a non-silladar regiment is 512, and the war strength 496—i.e., they have only 16 trained horses to fall back upon to make good casualties.

I believe I am right in stating that the war reserve of *untrained* horses maintained by the Remount Department in time of peace is only 1,000,* and that these thousand are the reserve, not only for the non-silladar regiments, but for the whole of the British cavalry and artillery as well. Where are the remainder to come from? From anywhere and everywhere, at exorbitant prices, as we have seen was the case in South Africa.

Now it is neither my intention nor my desire to criticise every statement and insinuation made by the author of this pamphlet, not that they are by any means difficult to reply to, but it would take too long, and my primary object in writing this article is to point out the enormous difference there is in the costliness of the two systems, and the insufficiency of the silladar's pay at present rates to cover his expenses.

The author states that he believes "that the present *annual* cost of a regular (*i.e.* non-silladar) regiment does not exceed that of a silladar by much more than Rs. 10,000." I propose to demonstrate that it exceeds it *by more than 15 times* that amount, and consequently if Government determines to convert the whole of the silladar into non-silladar regiments they must be prepared to provide for an *annual increase of over half a crore* in the military budget, to say nothing of the initial cost of buying the regiments out.

On the other hand it may be asked, supposing the silladar is granted this additional pay that you say is due to him, what will this increase the annual estimates by? The reply is—by just over ten lakhs or about one-sixth of the other alternative, and in addition to the lesser cost note the advantages—

Perfect mobility and permanent readiness for active service at a moment's notice.

Freedom from all red-tape paralysis and dependence on departments.

A reserve of over 4,000 horses, trained or under training, always maintained.

Absolute independence in the matter of transport, tentage, saddlery, clothing, etc.

And what can be said in favour of the non-silladar system? Merely that they are more "uniform," that is to say, that all initiative in thinking out new methods of carrying equipment—devising new patterns of transport saddlery—tents, etc., etc., is smothered: every thing must be done according to a sealed pattern and red tape.

Let us now see what the silladar system really is and in what way it differs radically from the regular or non-silladar system.

To begin with, the silladar system is a business contract between the State and the sowar.

The State guarantees to pay a certain sum of money to the sowar every month for a fixed number of years, and then provide him with a pension, on condition that—

* Report of Remount Department, 1903-04.

(a) he devotes a certain number of years to the service of the State;

(b) he is up to the standard of efficiency laid down;

(c) he provides himself with and maintains at his own expense—

a trained and serviceable charger,
saddlery,
transport,
lines,
camp equipment,
arms (except a rifle),
rations and all other requisites.

Now for any contract to be sound it must be one that is to the mutual advantage of both contracting parties. How far the present one fulfils this condition we shall see. At first let us consider it from the sowar's point of view, taking that of the State later.

The recruit, before enlistment, has to make up his mind to sell or mortgage a portion of his patrimony in order to invest the proceeds in the purchase of an assami. The word "invest" is used intentionally as it exactly describes the nature of the transaction—the capital sum always remaining to the man's credit until repaid to him on discharge. If the recruit cannot pay down the whole amount in cash on enlistment, the regiment advances him the necessary balance, charging him interest at the rate of $6\frac{1}{2}$ per cent per annum on the loan. The total amount that a silladar has to provide is shown below—

		Rs.
Horse and half share of baggage animal	...	360
Saddlery, line gear, uniform, arms, etc.	...	190
Amanat fund	... ..	45
		—
Total	...	505
		—

Prices vary in different regiments, but I think the above is well within the average.

Now if a man enlists in a non-silladar regiment he is not required to put down a single anna, and receives pay at Rs. 11 per mensem, hence this fixes the amount that is due to the silladar for his own services, leaving him a balance of Rs. 20 per mensem out of which to maintain his horse, transport animal, lines, etc., etc., and also to provide the interest which is due to him on the capital sum he has invested in the purchase of articles which in the case of the non-silladar are provided and maintained at the expense of the State.

I have already mentioned that if a recruit on enlistment cannot put down the whole of the capital required, the regiment advances him the balance and charges him $6\frac{1}{2}$ per cent interest for

it, and hence it is only fair that a man who has paid up should receive interest on the amount so paid, at the same rate, viz., 6½ per cent. Now if the sowar can manage out of the Rs. 20 to pay exactly all his expenses for maintenance and then have a sufficient balance over to represent exactly the six and a quarter per cent on his capital, it is obvious that he is not making or losing anything on his investment: he personally would be no better nor worse off if Government took over his horse, pony, etc., and arranged for their maintenance, handing him back his assami money, as he could always be sure of receiving an equal rate of interest in civil life.

If, however, he is able to save more than will just provide this amount, then it means that he is receiving a little higher rate of interest on his capital than six and a quarter per cent.

But when his Rs. 20 do not cover his expenses (and it will be found that this is always the case), it means that Government is making the unfortunate silladar pay for what it provides free to every other native soldier in India.

In former days when the silladar system was adopted the expenses that fell on the sowar were nothing like what they are now, and the purchase of an assami was a most profitable investment: so much so that a well-to-do native officer would often own half the assamis in a squadron, and the practice had eventually to be put a stop to as it was subversive of discipline. In those days horses were cheap, and so was the cost of feeding them, saddles and bridles were "home made," troop-lines were non-existent, parades were infrequent, and hence wear and tear was considerably less, and in many other ways, too numerous to mention, the cost of upkeep was infinitely less than it is now. As the standard of efficiency gradually increased so did the expenses; troop horses for Rs. 200 are no longer obtainable, and baggage ponies that formerly cost between Rs. 30 and Rs. 40 have now given place in many regiments to mules costing over Rs. 150 apiece. Saddles of European pattern have taken the place of native ones, the men wear uniform every day, and during the greater part of the day moves are carried out more frequently and to greater distances than formerly; camps of exercise and field manoeuvres have become regular institutions, tents of the latest pattern have to be maintained, and in a hundred similar ways the expenses have been increased without any corresponding increase in the pay.

Now there is a limit beyond which it is impossible to go, and it seems to me that this limit has just about been reached.

The changes indicated above have been brought about so gradually, sometimes almost imperceptibly, and regimental *esprit de corps* is so strong that no regiment would willingly consent to be the first to cry out that it could not keep pace with the rest and fall behind the others in the competition for general efficiency. The feeling is and has been, "if the others can do it, we must." But no one can do the impossible, and so means have had to be devised for raising funds somehow. In order to reduce the average cost of remounts, horses as young as two-year olds are sometimes purchased,

and old horses, over sixteen years of age, are retained, or possibly advantage is taken of the fact that someone in the regiment possesses a particularly good eye for a horse, and then a regular horse-dealing business is instituted, but whatever course be pursued it means that a certain amount of the "energy" of the regiment is lost to the public service, and this is not the fault of the silladar system, but the fault of the Government in demanding the impossible, for how can they expect the silladar to be able to obtain his remount for Rs. 300 when they themselves cannot do so for less than Rs. 800 (I shall explain the latter figure later on), the standard of efficiency is the same for both, silladar and non-silladar, and hence the quality of the horses must be the same.

But there is another point that merits attention. The class of native from whom the silladar cavalry is recruited is an extraordinarily conservative one. It more or less corresponds with that of the British yeoman class. The families are of some position and owners of land, their ancestors were warriors, and the warlike instincts have descended to the present generation. A certain number of the youths are required to work the land, the remainder are those who offer themselves as recruits. Now it is a curious fact that of this class will not enlist in the infantry nor in the non-silladar regiments. I am aware that recently a number of silladars have been transferred to the non-silladar regiments (upon reconstitution) and therefore it will be said that my contention falls to the ground but wait until these former silladars have had time to compare the advantages of the two systems. When a law-suit concerning some land is pending and the sowar urgently requires a hundred rupees or so to defend his case, from whom will he obtain the necessary loan? The silladar can get it from the regiment on the security of his assami, the non-silladar will have to go to the sowcar and pay, certainly 24 per cent, probably 36 per cent for it. What will his relatives think of his new position when he goes on furlough, and is unable to take his sword with him? And when the time comes for his discharge what will his feelings be to find that he has no sack of rupees to take away with him as is the case with his comrade in a silladar regiment? The silladar system has a tremendous attraction about it; the men feel a pride in owning their horses and in providing everything for themselves, and in addition to this, when they have done their 21 years in the service of the State, they are able to take back with them to their homes the price of their assamis in addition to the monthly pension they have earned.

Incidentally this raises the question of the advisability of having a large or a small assami price. To my mind everything is in favour of the former; *but the pay must be proportionate.*

To begin with, suitable remounts cannot be purchased for Rs. 300, and hence if the regulation price is fixed at that amount it has to be supplemented indirectly, either by differentiating between the various classes of remounts and charging the silladar more, say, for an Arab remount than for a C.-B. on the principle that he gets

it back in the course of time by the lesser cost of feeding or by auctioning the right of "first choice" from a batch of remounts. Now supposing a man has given an extra Rs. 50 for what appears to him to be the "pick of the bunch," and at the end of a year the horse has to be destroyed for, say, glanders, his Rs. 50 are lost, for Government will only grant compensation on the regulation price, and the regimental funds as a rule cannot afford to make it up to the silladar, whereas if the extra Rs. 50 had been added to the regulation price in the first instance he would suffer no loss, as he would get his money back again on discharge.

Another point in favour of the large assami is the increased amount a man is able to take away with him on his discharge, which is a very great attraction to the silladar. As a rule recruits put down Rs. 200 in cash on enlistment, and the balance is cut from their pay by instalments. Now so long as the monthly balance of his pay, after all regimental deductions have been made, is sufficient for his own necessary expenses, he does not mind whether his debt to the regiment continues for five or even six years, as G. C. pay or promotion soon provide him with a small balance for extras, and he knows perfectly well that his money is safe *and will all come back to him on discharge*, and a lump sum down of something over Rs. 500 *in addition to a pension for life is something to look forward to*, and, further, he knows it will provide the wherewithal to start his sons in life also, whereas if it were not compulsorily saved for him he would spend it as fast as he got it. On the delocalisation of the Hyderabad Contingent the men were asked whether they would like the assami price reduced or not, and they were unanimous in rejecting the proposal for the reasons I have stated above.

But if the price of the assami is increased, so must also the subscription to the chunda fund in a like proportion, for the calculation upon which the chunda fund is based is that each troop horse will do 10 years' service, and that at the end of that time he will have just paid for himself. Hence if the chunda subscription is Rs. 2-8 per mensem, it is only sufficient to provide a horse of the value of Rs. 300 ($2/8 \times 12 \times 10$): and there is also the value of a half share of a baggage animal to be reckoned for as well. The amount received by the sale of casters (which is practically *nil* in small out-of-the-way stations) provides a margin of safety out of which to make good losses on horses which do not last their 10 years, and also to pay the expenses of men sent on remount duty, etc.

But if the chunda fund subscription be increased, so must also be the sowar's pay by a like amount.

It is obviously unjust that different rates of chunda subscription are authorised for different regiments, in A. R. I., and yet no difference made in the man's pay.

To return once more to the silladar.

We have seen that upon enlistment he has to provide, either in cash or by instalments, a sum of Rs. 500 (take this as the

average). Now as Government authorise the regiment to charge $6\frac{1}{2}$ per cent per annum on the money it advances, it is clear that the silladar is entitled to receive interest at this rate on the whole value of the capital (assami), *viz.*, Rs. 500, out of which the regiment draw the interest on the portion they have advanced, the silladar only receiving interest on the balance.

In order to prevent misunderstanding I will put it in another way :

When Government require money for any particular purpose they obtain it by means of a loan. The money so obtained does not thereby become Government property—it is only *lent*, and for the whole time that Government make use of it, they have to pay the lender interest.

The transaction between Government and the silladar is on exactly the same lines—except that in lieu of borrowing money Government *borrow the articles that have been purchased with the money.*

For a non-silladar regiment Government borrow cash, and with that cash they purchase remounts, equipment, etc., but they have to pay the lenders their interest on this money, and, therefore, because the lender happens to be a Government servant (*i.e.*, a silladar), it would be manifestly unfair to *compel* him, as a condition of his service, to lend Government money without interest!

It may, however, be objected that until the silladar has paid up the whole of his assami price he has not fulfilled the conditions of his contract. *This is an error.* His contract compels him to maintain a horse, transport-equipment, etc., and so long as he does this it is no concern of Government as to whence the purchase money came from, *i.e.*, whether it is the man's own, or the sowcar's, or whether it is the result of a private business transaction between the man and his regiment. Government should pay the man his full interest and leave him to settle with his creditors as best he may.

Now this must not be confounded with *pay*, it is not *pay*, it is merely interest due to the sowar on the money he has invested in the regiment irrespective of any services at all, and hence this amount, *viz.*, Rs. 2-10, must be deducted from the Rs. 31 he received per mensem, in order to arrive at the correct sum he actually gets as *pay*, which thus works out at Rs. 28-6 per mensem.

Out of this sum Rs. 11 are due to him for his personal services, for this is the amount Government pays to a non-silladar, and hence the balance, *viz.*, Rs. 17-6, is what is left to him out of which to feed and maintain his horse and pony, and keep up the saddlery, lines, tents, arms, uniform, etc.

I propose dealing with these two sums separately, that is to say, only debiting against *pay proper*, *viz.*, Rs. 11, those items which a "bargheer" (dismounted man) has to pay and against horse allowance (Rs. 17-6) the sums which the silladar has to pay but which the "bargheer" does not.

Let us take the latter account first.

		Rs.	a.	p.	
Subscription to chunda funds	...	3	0	0	{ This includes pony chunda. In some regiments it is Rs. 3-8. I have taken the lower figure purposely as being the <i>minimum</i> .
Pay of syce	...	3	0	0	
Forge fund	...	0	7	0	{ This is the proportion due for repairs to saddlery, shoeing, etc.
Repairs to horse lines	...	0	4	0	
Upkeep of saddlery, stable-kit	...	1	8	0	{ Saddles are supposed to last for ten years.
Bhistie (for horse	...	0	6	0	
Troop cart	...	0	2	6	
Total	...	8	11	6	

Thus there is a balance of Rs. 8-10-6 left over from the Rs. 17-6-0 horse allowance, out of which he has to feed his horse and provide half the feed of his baggage animal, that is to say, in a month of 30 days he has to purchase 150 seers of gram (or its equivalent) and 900 pounds of grass, which is manifestly impossible, and therefore he is out of pocket. As Government only pays him compensation when the cost of feeding (including syce's pay, which is Rs. 3), exceeds Rs. 13-8. *i. e.*, when the actual cost of grain and grass supplied exceeds Rs. 10-8, he is probably always out of pocket every month to the amount of almost Rs. 2 (Rs. 10-8-0 minus Rs. 8-10-6), and if any of his troop cuttings are in excess of the amounts I have shown above, it is over this sum.

Now let us take the other head of account, *viz.*, his personal pay, and compare his lot with that of his comrade in a non-silladar regiment. The silladar receives nothing from Government with the exception of his rifle and a certain amount of ammunition.

The non-silladar gets, in addition to this, the following items:—
Free transport when marching in relief or on ordinary duty. Now that regiments march such long distances when moving in relief this grant of free transport practically represents a permanent increase of 2 annas a month to his pay all the year round.

Lines.—These being Government property are free, and in order to keep them in repair the regiment receives an allowance of Rs. 100 per mensem, which represents an addition of As. 2-6 per mensem to each man's pay, *not* including the initial cost of building the lines.

Kit.—A recruit gets Rs. 40 on enlistment and annually Rs. 5 half mounting, in addition to which he receives clothing, or compensation in lieu thereof, to the value of Rs. 11 per annum,* making an annual total of Rs. 16 or Re. 1-4 per mensem.

* A. R. I., Vol. XI, para. 283.

	Rs.	a.	p.	
Alkalik @ Rs. 5-8 (every 4 years)	...	1	6	0 per annum
Pantaloon @ Rs. 7-12 (" 2 ")	...	3	14	0 "
Shoulder chains @ As. 10 (" 5 ")	...	0	2	1 "
Boots @ Rs. 3-8 (" 2 ")	...	1	12	0 "
Khaki @ Rs. 3-5-11 (" 5 ")	...	3	5	11 "
Spurs @ Rs. 2-4 (" 5 ")	...	0	7	2 "
Total	...	10	15	2 "

Appliances.—According to A. R. I. the regiment draws Rs. 150 per annum for providing materials for sword and lance competitions, which the silladar provides out of his own pocket.

Tentage.—This costs the silladar As. 2 a month.

Lines.—(Exclusive of horse lines). For these the silladar pays As. 3 a month.

Forge fund subscription.—A “bargheer” pays As. 3 a month. From these figures it will be seen that the silladar is out of pocket, about Rs. 2 a month on his horse allowance, and in addition to that receives the equivalent to Rs. 2 a month less pay for his personal services as a soldier than his comrade in a non-silladar regiment besides getting no bonus for kit on enlistment. And what is the result?

Suitable recruits are becoming scarcer and scarcer every year, and those that come will not put down large sums of money in cash, as heretofore, thereby beggaring the regimental funds: so much is the case that in a certain regiment no less than half a lakh of rupees, of regimental money, are out on loan to the men, thus hardly leaving sufficient to form a working balance.

The mischief is that desirable men who no longer see the advantage of enlisting in the silladar cavalry will not do so in the infantry or in the non-silladar regiments, and hence their services are lost to the State (as soldiers) for ever.

As I have already mentioned, the native is most conservative in his ways—he enlists, very often, because his father or his uncles have done so before him, but in their time it was a fairly lucrative employment, and they were able to put money by, wherewith to purchase assamis for their sons; nowadays things are quite different: if a man on enlistment puts down in cash, say, only Rs. 100, his monthly cuttings are such as to leave him a balance barely sufficient to keep him alive, and this state of affairs extends over a considerable number of years: his friends in his village hear of it and, the consequence is, the supply of recruits falls off.

Once let the idea take root that service in the native cavalry is not worth accepting, and it will take years before it regains its old popularity, and in the meantime the youth who should be supplying us with recruits will find other employment, and the inherited love of military service will slowly but surely become extinct. I well remember, not many years ago, how there were always eight or nine youngsters, each with Rs. 200 or 300, waiting to be enlisted in the regiment, so much so that they used voluntarily to attend riding school and recruits’ drill, each with a view of outstripping his rivals in skill and smartness, and thus getting the first vacancy; now, however, there is a difficulty in keeping up the authorised establishment.

Having thus illustrated the case from the sowar’s point of view, let us consider the other side and see what return Government get for their money.

Well, they obtain, in the first place, a highly trained body of cavalry, permanently on a war footing, which is absolutely independent in the way of horses, saddlery, transport and supplies, of all

external aid, and is the most mobile force in the service of this or any other State. I don't suppose there is a single regiment amongst the whole silladar cavalry that could not march, fully equipped, for field service, with all necessary transport and camp equipage, *at 24 hours' notice, without the slightest fuss or confusion*, which is more than can be said of any other branch of the service.

Secondly, Government obtain the services of these troops at a minimum cost, in fact, as I have endeavoured to prove, at less than cost price.

But there are a certain number of people who maintain that Government would be better served if they converted the whole of the silladar into non-silladar, or so-called "regular" cavalry, similar to what is still commonly known as the Madras Cavalry, on the plea that—

(1) The men would be better mounted, that is to say, Government would be able to provide better remounts, *for the same money*, than the regiments themselves can. (The words underlined are essential to the argument; naturally Government could provide better remounts by giving a higher price for them.)

(2) The silladar regiments are not run on sound business lines, in other words, that there is a waste of public money.

Well, the easiest way to demonstrate this is to compare the cost of the two systems from the Government point of view. For this purpose I append a tabular statement showing the amounts required to maintain a trooper in—

(a) a non-silladar regiment (b) a silladar regiment		} for one month.		NON-SILLADAR.		SILLADAR.
				Rs. a. p.		
(1)	Horse chunda subscription	...	...	6	10	8
(2)	Feed of horse	...	...	14	3	9
(3)	Syce, including compensation	...	...	3	0	0
(4)	Jemadar syce (share of)	...	...	0	2	6
(5)	Forge fund (exclusive of sick-lines)	...	...	0	15	8
(6)	Tentage	...	...	0	1	6
(7)	Saddle fund	...	...	1	2	0
(8)	Up-keep of line gear	...	...	2	4	0
(9)	Clothing	...	...	1	4	0
(10)	Up-keep of lines	...	...	0	2	6
(11)	Pay of sowar	...	...	11	0	0
(12)	Interest on capital sunk	...	...	3	4	0
(13)	Free transport	...	...	0	2	0
(14)	Mule chunda subscription	...	...	1	6	0
(15)	Feed and maintenance of mule	...	...	7	8	0
(16)	Vet. estab. and medicines	...	...	1	0	0
(17)	Pakhalis (share of)	...	...	0	3	0
Total		...	...	54	5	7
						Rs. 31

From this it will be seen that it costs Government Rs. 23-5-7 a month *more* to maintain a mounted man in a non-silladar regiment than it does in a silladar regiment, or if we take Rs. 11 away from each total, that being the man's own pay, we find that the cost of maintaining a horse and equipment in a non-silladar regiment *is more*

than double what it is in a silladar, and yet in the "Madras Mail" of September 2nd, 1904, we read "Our contention has throughout been that the cheapness of the silladar system is mythical."

In order to prevent misunderstanding I shall now endeavour to show how these figures have been arrived at, taking each item separately.

(1) *Horse chunda subscription*.—As I have already pointed out, this represents the monthly amount that must be set aside to provide for the replacing of a troop horse after 10 years' service—in other words it is one-twelfth of one-tenth of the cost of a remount.

From the Report of the Remount Department, 1903-04, it will be seen that an Australian remount purchased for *British troops* costs about Rs. 270 more than for the native (non-silladar) cavalry; and that the average value of all *classes* of Australian remounts when issued to regiments amounts to about Rs. 1,050. If we deduct Rs. 270 from this latter sum we get an approximate price for a troop-horse in the *non-silladar regiments*, viz., Rs. 780, add to this railway charges, casualties, pay and allowances of Remount Staff, interest on capital sunk in forming remount depôts, etc., and I don't think I shall be erring on the wrong side by estimating that every remount delivered to one of the non-silladar regiments costs Government at least Rs. 800, from which a simple calculation fixes the chunda subscription at Rs. 6-10-8 per mensem.

(N.B.—The silladar chunda subscription is Rs. 3 a month, and this includes his pony chunda as well.)

Furthermore, I am supposing that all the horses last 10 years, i.e., that only one-tenth have to be cast annually, as is the case in silladar regiments, but I believe that the average number of remounts is about 60 per annum, whereas the establishment is only 512 (horses), so that even a chunda subscription of Rs. 6-10-8 would not cover the wastage.

(2) *Feed of horse*.—This seems enormous, when it is remembered that the silladar is supposed to (and generally does) keep his bill for (a) feed of horse, (b) half feed of pony, (c) half syce's pay, under Rs. 13-8 per mensem, but I am able to attach a statement showing the actual cost of feeding a horse in a non-silladar regiment at contract rates:—

Daily ration.	Per mensem.		
	Rs. s. p.		
10 lbs. rumnah grass	2	7 6
4 lbs. bedding „	0	14 4
4 lbs. gram (chenna)	3	15 11
4 lbs. koolthie	2	7 11
2 lbs. bran	1	10 5
1 oz. salt	0	1 8
Half grasscutter's pay	2	4 4
Grain crushing allowance	0	5 8
Total	14	3 9

I have not selected these figures in any way, nor is the locality in which the particular regiment is stationed an unusually expensive one, in support of which, there is a silladar regiment quartered there also, in which the limit of Rs. 13-8 given above is never exceeded, *i.e.*, compensation is never drawn.

(3) *Syce* (Including compensation).—A syce's pay is Rs. 5-4 plus compensation, and so I have assumed an uniform inclusive rate of pay of Rs. 6 per mensem, and one syce to every two horses. The proportion of syces is somewhat less than this, but on the other hand the pay is, normally, more than Rs. 6 per mensem, so that I think the estimate is a fair one.

(4) *Jemadar syce*.—There is one jemadar syce at Rs. 8-12 plus compensation (*i.e.*, about Rs. 10 per mensem) allowed to each half-squadron, in which there are 65 horses, which works out to about 2 annas 6 pies per horse.

(5) *Forge fund* (Exclusive of sick-lines expenses).—There is no forge fund, as such, in a non-silladar regiment, but the purposes for which it is maintained in silladar regiments have to be provided for in every regiment, and so the word is used here merely as a convenient descriptive title. In a silladar regiment a forge fund is organised for the payment of an establishment of able workmen to secure efficient repairs to the arms and accoutrements of all ranks, also to provide horse-shoes, nails, veterinary instruments, shoeing implements, horse medicines, etc., payment of staff salaries to salutries, farriers, etc., also for providing horse hospital expenditure, guard-huts and other contingent expenses.

In a non-silladar regiment the following establishment is maintained, the expenses of which would have to be borne by the forge fund if one existed:—

			Rs.	a.	p.
1 Store Superintendent at Rs. 25	...	...	25	0	0
4 Lascars at Rs. 6-5-4 plus batta...	...	...	25	13	4
1 Tindal at Rs. 8-12 do.	...	...	8	14	0
4 Chucklers at Rs. 8 do.	...	...	32	8	0
1 Chuckler Maistry at Rs. 12 plus batta	...	...	12	2	0
1 Lohar Maistry at Rs. 15 do.	...	...	15	2	0
1 Smith at Rs. 13 do.	...	...	13	2	0
1 Bellows-boy at Rs. 3-8 do.	...	...	3	10	0
1 Hammer-man at Rs. 7 do.	...	...	7	2	0
1 Chowdry at Rs. 14 do.	...	...	14	2	0
Syce allowance for repair of line-gear	...	...	18	0	0
Total			175	7	4

In addition, the following allowances are granted by Government:—

	Rs.	a.	p.
8 Rough-riders at Rs. 5-4	42	0	0
8 Ditto at Rs. 3-8	28	0	0
1 Drill Havildar at Rs. 10-8	10	8	0
1 Do. Naick at Rs. 7	7	0	0
Compensation for dearness of provisions and cost of biennial free issue of a warm coat to all lascars and tindals.	20	0	0
Total	107	8	0

These two sums added together amount to Rs. 283, which, divided by 512, the peace establishment of horses, works out at about As. 8-2 per horse: to this we must also add the contract shoeing allowance. On the supposition that a horse is shod on all four feet for only three months in the year (though I feel pretty sure that in non-silladar regiments the proportion is much larger) and on forefeet only for nine months, this averages a monthly charge of As. 7-6 per horse.

Hence the total amount of forge fund subscription that has to be provided for each horse, *exclusive* of veterinary charges, is As. 8-2 plus As. 7-6, i.e., As. 15-8.

(6) *Tentage*.—The Field Service Equipment Tables show that a total of 89 tents, costing Rs. 4,064 and calculated to last six years, are required for a non-silladar regiment, which works out at a monthly charge of As. 1-6 per man.

(7) *Saddle fund*.—The cost of a complete set of saddlery is a little over Rs. 80, which, with the exception of the metal parts, is renewable every six years (certain articles like straps every three years), which represents a monthly charge of Re. 1-2-0 per man.

(8) *Up-keep of line gear*.—A set of line gear costs a little over Rs. 30, renewable at expense of State at various periods, which works out at a little under Rs. 18 per annum. In addition to this each man receives As. 8-6 per mensem for keeping up his line gear and also a free allowance of dubbing and soft soap.

N.B.—The allowance to syces has been included in the forge fund account.

(9) *Clothing allowances*.—These have already been explained.

(10) *Up-keep of lines*.—This represents each man's share of the Rs. 100 per mensem allowed as "hutting money."

(11) *Pay*.—Needs no comment.

(12) *Interest on capital sunk*.—This is a difficult matter to arrive at for anyone who has not access to the records concerned. However, I have been able to obtain some idea of the cost of "lines" from the fact that some infantry lines are being constructed in this station, and judging from the amount that they will absorb, exclusive of bells-of-arms, sinking wells, guard-room, cells, etc. (which buildings

Government also provides for silladar regiments), lines for a non-silladar regiment would cost something over a lakh of rupees, or something like Rs. 200 per mounted sowar.

In addition to this Government must provide the necessary capital for the following items:—

	Rs.
1 horse at Rs. 800 ...	800
* Half a mule at Rs. 200 ...	100
Line-gear ...	30
Saddle... ..	80
† Tent... ..	8
Recruit's kit donation ...	30
Pack saddle, etc., for mule ...	50
Cost of lines ...	200

Total ... 1,298

This at 3 per cent per annum represents Rs. 39, or Rs. 3-4-0 per man per mensem.

(13) *Free transport*.—This refers to the transport allowed by I. A. O. 15 of 1904, in lieu of batta. A regiment moves on relief about once in three or four years, which costs the silladar a sum varying directly with the length of march, but certainly never less than Rs. 5, which is approximately As. 2 per mensem.

(14) *Mule chunda subscription*.—This is another difficult matter to estimate; Government mules are divided into ordnance, 1st class and 2nd class, and probably the cavalry baggage mule is only a 2nd class one. The average cost to Government for a mule supplied by the Remount Department last year came to just over Rs. 300, and this doubtless does not include the cost of the pay of the Remount Officers, nor travelling expenses of purchasing parties to S. America and other places. However, to prevent being suspected of "cooking" my figures I only value the mule at Rs. 200, and when cost of railing the animal up and down India is taken into account, this cannot be considered an excessive estimate. We will also suppose the mule to work for 12 years, and thus to fix the chunda subscription we have one-twelfth of one-twelfth of Rs. 200, which equals Rs. 1-6-0 per mensem roughly.

(15) *Feed and maintenance of mule*.—According to the Field Service Equipment Tables, should pack transport be necessary, a regiment of non-silladar cavalry requires no less than 345 mules (summer scale) or 378 on the winter scale, hence this establishment ought to be maintained *somewhere* or the regiment is unfit for service in the event of pack transport being a necessity. I do not for one moment mean to infer that transport on a war scale should

* 512 men, allowed 176 mules for wheel transport or 378 mules for pack transport, which gives the average of 277 mules, or over half a mule per sowar.

† The total cost of tentage (excluding hospital establishment) is Rs. 4,064, which, divided by 512, gives an average of about Rs. 8.

be always maintained in times of peace—the cost would be enormous and out of the question—but as the silladar is obliged by Government to maintain *his* transport on a war scale in time of peace, in endeavouring to compare the relative costs of the two systems to Government we must assume that the non-silladar regiment has its requisite transport *somewhere*.

However, not to labour the point, let us compromise by assuming that one-half the transport can be pack and the other half wheel. This means that, on a winter scale, 277 mules are required, together with harness, line-gear, transport carts, and attendants, which may be taken as representing one mule for every two sowars.

Here again the non-silladar system is wasteful, for instead of the same establishment looking after both horse and transport animal, an entirely separate establishment and a separate set of lines, etc., are maintained, thereby increasing the bill for pay, effective and non-effective, enormously. The feed of a mule cannot be under Rs. 10 per mensem (judging from the amount required to feed a Government horse), added to which is up-keep of line-gear, transport saddlery and carts (for if these things are *not* kept up the regiment is *not ready for service*). And I think Rs. 15 a month will not be considered an excessive estimate: this gives us the cost per sowar, *viz.*, Rs. 7-8.

(16) *Share of Veterinary Establishment.*—In a silladar regiment no provision is made by Government for a veterinary establishment; certainly, a "salutrie duffadar" is included in the regiment, and so are also a farrier-major and eight farriers, but these men are not given any special allowances by Government. The salutrie receives an ordinary duffadar's pay, so also does the farrier-major, but the farriers are reckoned as sowars with the exception that they are permitted to ride animals under the regulation charger height. And how are the salutries trained?

They may be sent for a two years' course to the Veterinary School at Lahore, but the usual sequel to that is, that if the man is any good he will at once obtain an offer of some civil appointment and claim his discharge, so his services are lost to the regiment; consequently, at any rate from this part of India, the Lahore School is not much appreciated. The other technical school open to them is at Poona, where a man goes for a four months' course, and in this period he is supposed to learn everything and never to forget it, for the same man is not permitted to attend the same course twice. May I be permitted to ask the question—if these horses and mules had to be replaced at Government expense (and not at the men's) would they be satisfied with such veterinary arrangements?

That our casualties are actually less per annum than in the non-silladar regiments can only be attributed to the fact that more individual care is bestowed upon the animals by both officers and men, for which, by the way, not the slightest credit is ever given them.

What does a subaltern in a non-silladar regiment learn about treating sick horses. For example, a report is made to the squadron commander that a horse is off his feed, or is going short, or has had a tread on parade. What happens? Off it goes to the sick-lines, in the same way that one would send a pair of boots to the bootmaker, and no one knows (or cares) what it was suffering from, the treatment necessary, or how to prevent a recurrence. This is actual fact and no exaggeration. Why, the squadron commander is not even permitted to criticise the shoeing of his own squadron.

In a non-silladar regiment the cost to Government per month for veterinary establishment is estimated as under.—

	Rs.
1 Veterinary Surgeon (say)	400
4 Veterinary pupils @ Rs. 14 with batta and compensation (say),	60
Allowance to farrier-major, over and above his pay as a farrier- duffadar	21
Medicines and instruments (say)	20
Total	501

To this must be added a sum to represent the pensions that these individuals will be entitled to when they retire, and hence the estimate of Re. 1 per horse, or Rs. 512 per regiment per mensem, is by no means extravagant.

(17) *Share of eight pakhulies.*—These receive pay at the rate of Rs. 10-11-10 per mensem, plus compensation and free carriage, which together can be averaged at Rs. 12, hence these eight men cost Rs. 95 per mensem, which sum divided by 512 gives three annas per man. These men also get the following clothing free, which I have not taken into account :—

1 warm coat	} biennially.
1 warm pair of knickerbockers	

In working out a calculation similar to the above, it is extremely difficult to prevent errors from creeping in, and, I trust, should any have done so, that it will not be thought that they were intentionally made, with a view to strengthening the case.

There is no necessity for any such questionable assistance, and any juggling with figures would only damage the silladar cause.

But in comparing the costliness of the two systems a difficulty arises from the fact that in a silladar regiment every man is mounted, whereas in the non-silladar some seventy odd are permanently dismounted, that is to say, the cost of feed and maintenance of their horses is saved (but where the horses for these gentlemen are to come from in time of war is not stated); possibly these men are maintained as a reserve to replace human casualties at the front, but experience proves that the loss in horseflesh is in far greater proportion than that of the riders, so that the horses will be the first thing required, and yet the non-silladar regiments have no

reserve of horses whatsoever. It will not be possible to obtain them from the Remount Department, for they have not got them to give, and if, instead of only three non-silladar regiments, provision had to be made for supplying the whole 39, I fancy many regiments would have to remain behind for want of mounts.

Another matter which tends to make comparison between the systems difficult, is that the establishment of N.-C. O.'s is not identical, nor are the rates of pay, and for these reasons I have only compared the relative cost of fitting out and maintaining one mounted sowar in each. To attempt to do more would only confuse matters, and, as already stated, my object is merely to show the enormous cost of the non-silladar system to Government and also how greatly underpaid is the silladar at the present time.

That the silladar system, as it exists at the present day, is beyond improvement, I do not suppose anyone will seriously contend. As a simple example to prove that it is not perfect one has only to point to the difference in assami prices. The assami price exactly corresponds to the price of a share in a commercial company.

Now if the dividends in 36 different companies were always identical (the pay in the 36 regiments is the same, *viz.*, Rs. 31 in each) and yet the cost of the shares varied in each, which would the public be the more likely to patronise? Undoubtedly the one with the cheapest shares, in other words, the one with the lowest assami price, *i. e.*, the one where troop horses cost Rs. 200 and everything else is done on the same scale. Hence Government are holding out a direct inducement to regiments to provide the minimum quality that will pass muster. That they do not do so is a splendid tribute to their loyalty and affection for the service and their *esprit de corps*, but in the event of Government ever deciding to buy up the horses and take over the chunda funds of silladar regiments, in what manner will they determine the prices to be paid? To pay merely the regulation compensation rates would be not far short of robbery, and would, in addition, be base ingratitude. The actual value of silladar horses is far and away greater than the nominal or regulation value. The extra cost has been met either by direct cash payments on the part of the men as already explained or by successful horse-dealing operations; but the fact remains that the silladar is providing for the public service a better class of remount than the mere terms of his contract oblige him to do, for which he not only receives no credit, but suffers actual pecuniary loss by having to pay a higher chunda subscription. Surely, then, he deserves most generous treatment in return.

It is acknowledged that the silladar system differs from all other systems of military service; why then do Government persist in treating it as though it were the same? It is a business contract; then treat it as such. The Government have a business contract, for carrying the mails, with the P. and O. Company. Can they alter the conditions of that contract without the consent of the shareholders? By no means! No sooner do Government demand an increased

rate of speed for the mail steamers than the Company forward their claim for an increased subsidy, and yet has anyone ever accused the P. and O. of breach of contract, or stated that the contract system was breaking down? Let Government look upon the silladar system in this light, and then there will be no question of *its* breaking down.

If a higher standard of horse is required than formerly or a better class of saddlery than was contemplated when the original contract was drawn up, let them treat the silladars as they would a commercial company, and ask them what increase they require in the amount of their remuneration.

Do not long years of faithful service merit some consideration? Has the silladar ever failed to fulfil his obligations? Has he not time and again given proofs of his efficiency and usefulness, and, finally, is not the silladar cavalry more mobile, more independent, and more enterprising than any other cavalry in the service of the State? In addition to this, it is infinitely cheaper and is always ready for service at a moment's notice.

CAVALRY PAST AND PRESENT.

A LECTURE.

BY LT.-COL. J. S. WESTERN, 22ND SAM BROWNE'S CAVALRY.

In the short time at our disposal it will be impossible to deal with such a large subject in any but the most cursory manner.

I propose first to give a very short précis of the evolution of Cavalry up to the time when breech-loading arms of precision became universal, then to give a few examples of interesting Cavalry incidents that have taken place in war, since the introduction of breech-loading arms, discussing with regard to each the most instructive points that occur to me, and lastly to point out what seem to be the most necessary details to which to give attention, in the training and employment of Cavalry in the present day.

As regards the evolution of the present day Cavalry from its ancestors in the past, it will be sufficient if I take as a starting point the time when the Cavalry arm generally consisted of small troops of mounted men brought into the field by individual knights.

As every knight brought his own tribal gathering with him mounted, clothed, equipped and led them in his own way, it stands to reason there could have been no uniformity in equipment or tactics. Gradually war, from being tribal, became dynastic, the mercenary ousted the feudal levies, and uniformity of some sort commenced to emerge from chaos.

Leaders commenced to organise their forces in bodies of about equal strength, and troops and squadrons were eventually evolved.

Colonel Maude in his book on Cavalry tells us that in those days it was the custom for the followers of the knight to charge in a wedge formation. When Cavalry first began to be formed into troops and squadrons, the usual formation was similar to that of our squadrons of the present day when formed up for sword exercise, by the word of command, from the right of fours to the front file, that is to say, some eight ranks with about one horse's length interval and distance.

Every Cavalryman knows that to move a force in this formation for any considerable distance to either flank, without disorder, demands considerable horsemanship from the individuals; hence it is certain that the individual control of the rider over his horse was of a fairly high standard. There seems considerable doubt as to when the charge in line first arose, but it seems pretty certain not to have been a part of acknowledged tactics before the latter half of the sixteenth century, and the following picture of a battlefield of those days is given us by Colonel Maude:—

“Cavalry destitute of that uniformity of training which can alone ensure the combined action of masses, riding about the battlefield and

charging at the trot in loose order, relying on their individual powers more than on the shock of squadrons. Infantry standing to receive them in physically impenetrable masses, and Artillery so over-weighted by their own, ballistic power that they could not move to ensure success or to avert the consequences of defeat."

These tactics seem to have lasted till the Cromwellian epoch. That the practical difficulties and responsibilities of training Cavalry in those days was fully appreciated is shown by the following extract from a quaint little book, probably one of the first drill books ever published, called "The Souldiers Accidence," published by S. Markham, London, in 1643:—

"Infinite great (and not without much difficulty) are the considerations which dependeth on him that taketh upon him to teach, command and govern a troop of horses. For to instruct man only (who is a reasonable creature, can understand my language and apprehend my directions), though he be never so ignorant and peevish, yet there is much ease in the progress, and what favour cannot persuade, authority and punishment may inforce. But to bring ignorant man and more ignorant horse, wild man and mad horse, to those rules of obedience, which may crown every motion and action with comely, orderly, and profitable proceedings; '*Hic Labor Hoc Opus*.'"

In this old drill book no mention of "shock" in the modern sense occurs, and it is probable that the charge previous to those days was a mutual approach to pistol shot, followed by a series of individual encounters.

About this time, these two great leaders of horse, so different in their characteristics, Cromwell and Prince Rupert, come on the scene.

Cromwell steady, methodical, resolute, never losing his head. Rupert dashing, quick to seize the opportunity, reckless, impetuous, always confident.

Our sympathies no doubt go out to the latter, but success was for the greater part meted out to the former, and he undoubtedly proved himself to be the better *soldier*. We have not time to go into their various engagements, but a study of the battles of Marston Moor and Naseby teaches us some valuable lessons, just as applicable now as in 1644-5. From both battles we learn the immense advantage of rapid rallying and having dependable troops in hand.

Rallying implies not only a thorough control of the rider over the horse, but also of the leader over the men, and Cromwell, during the Marston Moor battle, charged and rallied three times, and each time after a most obstinate *mêlée*.

The battle of Naseby too was a decisive battle to the Cavalry arm. Four times were Cromwell's squadrons led to the charge and successfully rallied after each, and the day's fighting was followed by a pursuit of 14 miles. The broad principles of Cavalry tactics were throughout adhered to, Cromwell's troops were formed in three lines, one regiment was detached to secure the exposed flank, his attack was a combined front and flank one, he took advantage of ground to

conceal his movements, and the various charges were delivered by men riding home, knee to knee.

From the days of Cromwell to those of Frederick the Great is another 100 years; it is probable that during this period the continental cavalries, which reached a fairly high pitch of efficiency during the Thirty Years' War, suffered from the effects of such long continued operations, and went through a period of decay; there was so much fighting that the Nations were no doubt war weary, the religious element had died out, and there was neither a cause nor a leader to fight for.

As regards the British Cavalry of about this time, under Marlborough it was certainly, *relative to its enemies*, in a *sufficiently* efficient condition. There is no evidence forthcoming that in those days the charge at the gallop was ever executed.

At the *accession* of Frederick the Great the Prussian Cavalry were at a low ebb, though their outward appearance would have no doubt gladdened the heart of the ideal Sergeant-Major. Frederick himself criticised them in the following words:—

"The heavy Cavalry consisted, like the Infantry, of very big men, mounted on monstrous horses. These Colossi on elephants, however, could neither manœuvre nor fight. No parade went by without some of them falling off. The officers had no conception of cavalry service."

Yet the *material* must have been excellent, for it was this same Cavalry that a few years later reached such a high pitch of efficiency, and under Seydlitz achieved such glorious successes against the French and Russians at Rozbach and Zorndoff. At this time Cavalry of the line in all countries consisted of Cuirassiers, Dragoons, Carabiniers, and Light Cavalry or Hussars.

The latter were at first meant for the protection of the heavy Cavalry, but the inconveniences which arose from this absurd measure speedily caused the heavy Cavalry to be taught sufficient scouting and outpost work to render them independent.

To those who have studied the Cavalry drill book issued to our troops a few months ago, the following personal orders from Frederick the Great to his Cavalry in about 1743 will be excessively interesting. In part II some of those rules are produced in nearly the same words.

The Great King says: "The officers must see that their men ride continually, so that each man can handle his horse himself, turn and twist it and be completely its master. When they can do this, *then* the squadrons are to be formed." And the regulations continue—"The men must be as completely masters of their horses without saddles as the trainer in the school saddle."

The recruits are to be thoroughly trained on foot before they are allowed to ride. The stirrups are to be of such a length that when the man stands up in them he clears the saddle by a hand's breadth, "so that they can put more force into their blow." The reins to be held short, the elbows close to the side.

Men are not to be made to ride without saddles until they are completely at home with stirrups *in* the saddle. The men to be

taught to cut at straw dummies at full speed, to jump ditches and obstacles, singly and in sections.

"Riding drill for everybody every day, and even on Sundays the horses to be exercised."

"I tell you I think so much of the importance of your arm, that I expect more from a Lieutenant of Cavalry than from a Major of Infantry. When I visit the outposts I expect every subaltern in charge of a piquet to be able to tell me exactly all about the ground for five miles round, and be able to make an intelligent sketch of it."

"If I send him on a patrol, he must be able to tell me exactly where, and how strong, the enemy is, and how best to get at him; what the roads are like, and whether I can move guns by them, etc., and when the time for the charge arrives I expect you all to seize the opportunity, and not to wait for orders, which *always come too late.*"

All Frederick's regiments were trained to work rear rank in front or in any order of units—as the King said, "It does not really matter how the squadrons stand, provided they all *get* there;" and, in rallying, the men were actually forbidden to look for their proper right or left-hand men. Get into a line quickly and charge—that was all that was required.

With regard to the employment of lines and reserves in those days, primarily the enemy was to be defeated by the first line charging knee to knee; the first line was therefore made as strong as possible, as many squadrons of Cuirassiers (the Heavies) as possible were generally placed in the first line, the Dragoons and Carabiniers being also formidable in shock, but superior in speed to the Heavies, were placed in the second line on which the brunt of manœuvring would principally fall, and the Hussars or Light Cavalry were kept in reserve, to do good service when the enemy had broken and got into disorder.

Frederick's Cavalry reached its zenith under Seydlitz, and after his death rapidly degenerated. From about that period onward the organisation of the Cavalries of Europe did not alter much until about the epoch of the Franco-Prussian war. I have prepared notes on Seydlitz's actions, Napoleon's Cavalry, our own Cavalry in the Peninsula, &c., but my lecture is rather a long one, so I will pass on to the Franco-Prussian war.

I may first mention that I wrote to the U. S. Institutions at Home and out here for examples of Cavalry employment in Manchuria, but without success.

As far as I know actual detail of Cavalry work in Manchuria has not yet reached this country. The Russians had large forces of mounted troops at their disposal, but I have not been able to get information of any purely Cavalry combat, other than the small action at Wa-fang-kou, about 80 miles N. of Port Arthur, at the end of May 1904, when two Russian squadrons armed with lances charged one Japanese squadron armed with swords, enveloped and destroyed them. This, of course, is interesting to upholders of

the lance, as is the fact that the Japanese fired from the saddle as they charged, with absolutely no effect. We now come to the battlefield of Vionville. On this eventful day (16th August 1870) so rich in Cavalry enterprise, the first charge of any importance, that of General du Preuil, took place about 11-30 a. m. The French Infantry were at this time retreating at a run in the direction of Rezonville, followed up slowly by Prussian Infantry and batteries. General du Preuil had with him on the *high* ground near Rezonville five squadrons of Cuirassiers of the Guard and under his orders to the S. W. of Rezonville the 3rd Lancers in the angle of the roads. These latter made a half-hearted, futile advance by wings towards the advancing Prussians, never attempted to get home and swung off to the right with a few casualties. General du Preuil was now ordered to charge with the Cuirassiers, 575 sabres; he protested against doing so, pointing out the undesirability of charging unshaken infantry in close formation. General Frossard replied: "Attack immediately or all is lost." General du Preuil accordingly deployed into three lines, with about 150 yards distance between each, two squadrons each in the first two lines, and the 5th squadron in reserve. Although the distance was at least 2,500 yards the first line started at a wild gallop, and before reaching the enemy came across the *débris* of an abandoned camp, which threw it into disorder and caused it to bear off to its left, thus unmasking the second line; both lines came under a withering fire, and both French and Prussian accounts agree that the charge was of little effect. Failure under the circumstances to break perfectly unshaken infantry, supported by artillery, both arms flushed with the confidence of a successful advance and of having, as they no doubt thought, already beaten off one Cavalry charge (the half-hearted advance of the 3rd Lancers), is not a matter for surprise, neither does it prove anything in favour of the breech-loader, for the result would have been the same in the days of the old Brown Bess, but even under the manifold calamities attending the attack, the horses badly led, and blown before they reached their objective, the line thrown into disorder through want of proper ground-scouting, an attack on an enemy confident, elated, well posted and ready, it is clear that some of the Cavalry did get up to their objective, the Prussian account showing that some of their commanders were killed in front of their men.*

Very different in its results was the next Cavalry action of this day that we will discuss, Von Bredow's celebrated charge. By this time (about 1-30 p. m.) the position of affairs had become considerably changed, and it was the situation on the German left flank that had become critical. The strategy of the campaign is no doubt known to most of you. The French after their defeats at Spicheren and Worth were retreating on the Meuse, and Von Moltke had directed a vigorous attack of the Prussians upon the road from Metz to Verdun in order to reap the fruits of their previous

* The casualties were 22 officers, 208 rank and file, 243 horses.

day victories. The French were more or less concentrated in the neighbourhood of Rezonville and Gravelotte, the Germans with an inferior force were making a wide flanking movement. At this time the last available German infantry reserve was holding the east edge of the Tronville copses, opposite them lay the whole of the French 3rd Division in two lines, supported by the Corps Artillery of Canrobert's Corps, 9 batteries and 15 battalions.

I will now give you the experiences before the charge of Lieutenant Pohl, an Infantry German Officer who had an exceptional opportunity of perceiving the whole affair.

"On the day of the battle, Lieutenant Pohl, then a subaltern of about eight years' service, was detailed as galloper to von Buddenbrock, the General Commanding the 6th Division. Somewhere between 1 and 2 p.m. he and his Chief took up a position on the high ground west of Vionville, where they were under a heavy shell fire. He was the only officer remaining with the General, the others having been despatched with orders to different parts of the field.

In front of them, just beyond Vionville, lay the remnant of the 24th Regiment of Infantry, extending in a single line of skirmishers from the great Chaussee Vionville-Rezonville to the old Roman road, a space about 1,000 yards across. They were without supports or reserves of any kind, and there was no hope of their receiving either for many hours; their ammunition was running very low, and the men were completely exhausted.

Of course at the time, both Lieutenant Pohl and his General were unaware of the precise strength of the French, but the appearance the latter presented was that of an almost continuous double line of deployed battalions and a line of guns.

Suddenly the General turned to his aide and said: "I am so tired, I am going to sleep; call me if you notice anything," and dropping his reins on his horse's neck he fell fast asleep. He had practically no rest for the last three days, and was absolutely worn out.

Shortly afterwards his galloper saw a large body of French Cavalry, which he estimated at least a division (it was, as it happened, de Forton's Division) ride up and take post north of the Roman road; feeling that if they realised the condition of the Prussian Infantry and charged, the latter were in no position to stop them, he woke his Chief, and, having pointed out the new arrivals, he proposed that he should go at once and find the nearest Cavalry and call on them to charge first and thus anticipate them.

The General at first objected, but soon realising the true state of affairs, he said, "Well, go, find the nearest Cavalry, and call on them to extricate us." Lieutenant Pohl accordingly rode off, and on his way was met and stopped by the Chief of the Staff of the 3rd Army Corps, von Voigts Rhetz, to whom he reported his mission and the situation generally.

The Chief of the Staff repeated the stock observation about Cavalry and unshaken Infantry he had doubtless so often repeated

on many peaceful manœuvre fields: but when *he* took the whole situation in and realised the helpless condition of the 24th Infantry, he agreed that something must be done at once, and pointing out where Bredow's Brigade lay, said, "Go and call on them to charge, and if they require a positive order before doing so, I will be back in a few moments with one from the Corps Commander."

Rising the low ridge in the direction indicated Lieutenant Pohl saw the brigade drawn up and made his way to the Brigade Commander, Major-General von Bredow. He relates that he felt the position acutely. It was an awkward position for a young infantry subaltern to have to ride up to the most distinguished Cavalry soldier of the army, and call on him to sacrifice his brigade; and, as a fact, Bredow gave him no help, but treated him as a young officer who had lost his head.

Whilst they were still talking the Chief of the Staff returned with the *definite* order to charge and *sacrifice* the brigade if necessary. Bredow drew his sword, and, turning to his trumpeter, ordered him to sound the "Trot."

I have myself walked over this ground. It is quite possible that in the stress of fighting, the brigade was not noticed by the French, until they were very close to them; there is a distinct fold in the ground to the east of the Tronville copses; von Bredow's Brigade consisted of about 750 effectives, 7th Cuirassiers, and 16th Lancers. The brigade crossed the main road about 1,000 yards west of Vionville in column of troops, Cuirassiers leading, and advanced about 1,500 yards in the hollow east of the Vionville copses. The brigade then wheeled into line to the right and von Bredow sounded the gallop, the Cuirassiers wheeled a little before the Lancers, so the latter really formed an *échelon* at about 150 yards to the right rear. The squadrons swung along at a gallop, and the horses were blown before the infantry was sighted. The C. O. of the 16th Lancers had just said to his Adjutant: "I cannot see the enemy," when the infantry came in view and a shower of bullets saluted the line. I have explained that the Cuirassiers were leading on the left. They first struck No. 5 Battery of the 8th Regiment which was somewhat in advance of the general line, it tried to retire at the gallop but was at once caught up and wrecked. Then the Cuirassiers met four batteries in succession who were "on the move" to reinforce the guns in front, they were ridden through and overthrown, a 12-pounder battery was swept into the infantry, knocking down whole sections of men, and while this confusion was rampant the 16th Lancers reached the infantry. To show the intense confusion that must prevail amongst the rank and file in battlefields on such occasions and of how little men know of what is occurring except in their very immediate neighbourhood, it is allowed in both French and German accounts that there was momentary hesitation in the (French) battalions, the German Cavalry being mistaken for French Cavalry. However even "momentary" hesitation against a galloping enemy is fatal; we read that few men took sufficient time

to aim, many fired their rifles hastily from their hips, and that the infantry broke up and rushed in large groups towards Rezonville. Nothing could withstand the Cavalry torrent and pursuit was continued nearly up to the Rezonville-Villiers road; but now comes retribution, and the tactical sin of launching Cavalry with no orders of where to rally, one line without supporting bodies, reaps its own reward. De Forton's division was formed up north of the old Roman road and von Bredow, whose squadrons had trotted two and galloped 2½ miles, found 23 squadrons advancing on his front and left rear. One would think this must have spelt absolute annihilation. The Frenchmen's steeds were fresh, von Bredow's horses were blown. That they were not altogether rounded up is no doubt due to the confusion of the French infantry, artillery, guns, limbers, etc., being all mixed up in the mob. Von Bredow the moment he saw the French Cavalry sounded the "Rally," but most of the survivors seem to have made their own way back to Flavigny. The regimental history of the 20th German Regiment gives the following account of von Bredow's personal escape:—"A scattered crowd of Cuirassiers rush past our position, in their rear is seen a senior officer, soon recognised as General von Bredow, who is closely pursued by French Cuirassiers. The General's horse is exhausted and the French are every moment gaining ground, when a soldier of the 11th Company, running forward, shoots the leading French officer as he raises his sword to cut the General down. Our men cheer and the French retire." The casualties in Bredow's Brigade actually were 16 officers, 420 men, 485 horses, out of 750. Before commenting on this action I will describe another one that took place a few hours later: von Bredow had successfully stopped the advance of the 6th Corps, but about two hours later the French 4th Corps, which had been performing a turning movement, commenced to advance in great force on Mars la Tour. They were opposed by the 38th Brigade, who, after a desperate fight in which they had lost 57 per cent, were being driven back in confusion. The German batteries were still in action, but the French were within 400 yards of the guns. The 1st Dragoon Guards, who had been under saddle since 4-30 a. m. and marched 35 miles that day, were four squadrons strong a little S.-E. of Mars la Tour. They received orders to cover the retreat of the 38th Brigade; the Brigade Commander pointed out that he had only one regiment at his disposal and received a very similar reply to that given to Generals du Preuil and von Bredow: "I don't expect the regiment to succeed, but if it gives us 10 minutes' breathing time it will have fulfilled its mission, even if it falls to the last man." One squadron was left in charge of the guns and the regimental standard, and the remaining three squadrons, in all 426 sabres, moved off at the trot in column of troops, at first due north across the front of the advancing French. As soon as the enclosed ground in the neighbourhood of Mars la Tour had been cleared the troops wheeled into line to the right and advanced straight on the 13th Regiment; this was composed of three battalions, and was followed

at 50 paces distance by the 43rd Regiment of similar strength, when within 80 yards of the 13th Regiment Colonel von Auserweld sounded the charge. About this time all the senior officers were knocked over or hit, though the Colonel managed to reach the rallying point south of Mars la Tour, where the reserve squadron was, and was helped off his horse a dying man. Out of the 426 sabres the casualties were 15 officers and 123 other ranks and 216 horses, but the regiment by its self-sacrificing devotion had extricated a defeated infantry brigade, saved several batteries of artillery and checked the advance of 5,000 men. It is worthy of note that the casualties in the Cavalry were of a less percentage than had been suffered by the brigade it extricated and about the same proportion as von Bredow's and du Preuil's men suffered, *i.e.*, about half the effective.

Now for a few comments upon these two actions. The day was a very bright, cloudless, hot day, both von Bredow's men and the first D. G.'s had been over 12 hours under saddle, Bredow's men had marched 27 miles, the last ten at a trot, and neither man nor horse had had any rations that day; von Auserwald's men had, previous to their charge, marched 25 miles, under probably the same ration conditions. Of course this was near the beginning of the campaign, and the horses were probably still in good condition. The country is quite good Cavalry country, undulating, affording good cover from view, and nothing to stop horses except in the immediate neighbourhood of the villages. In both examples the gallop was begun much too soon, and ground scouts were not sufficiently employed, there seems to have been no combat patrols. These, I think, are products of the latter day drill books.

An interesting lesson is the insignificant effect of artillery fire of those days on moving targets; von Bredow's squadrons were under artillery fire from the time they moved, but most of the casualties occurred in the hand to hand fighting after de Forton's Division had swept down upon them, and during the retreat. For *Infantry* to hit a moving target is not very easy at any time; when men are excited and confused in battle it is trebly difficult, as the fact that von Auserwald only had 138 of his men hit shows; that in both charges the casualties amongst the horses far exceeded the human casualties shows that the tendency is to fire at the horse and so get the larger target, so, what price the small bore bullets of the present day that undoubtedly have not half the stopping power of the chasseur and the needle gun. Of course both these examples are occasions where Cavalry were called upon to sacrifice themselves for the welfare of the other arms, and are in no way illustrative of the proper employment of large masses of Cavalry on the battlefield.

I will now change the locality to South Africa and read you a translation from the German official account of the South African war, of the charge of French's Cavalry Division at Klip Drift, which I have a little amplified from other records. It shows that the charge of masses of Cavalry even against troops armed with modern rifles is a by no means hopeless or desperate undertaking.

"General French intended to continue his advance for the relief of Kimberley early on February 15th, in order if possible to reach that town on the same evening, but the Boers had blocked the road during the night, a detachment, about 900 strong with three Krupp guns, having occupied the kopjes north of Klip Drift in a semi-circle about $2\frac{1}{2}$ miles in extent. Somewhere about the centre of the Boer position there was a col from 1,200 to 1,300 yards wide which connected two neighbouring kopjes, and the ground sloped gently up from the river. This column was within effective range of the Boers ensconced on both the kopjes, the three Krupp guns being on the western hill."

In consequence of the reports sent in, French ordered his 7 batteries of Horse Artillery, which were soon afterwards joined by two batteries of the Sixth Division and two 12-pr. naval guns, to come into action on the heights of the north bank.

Simultaneously with the opening of the Artillery fire, the infantry of the Sixth Division advanced north of the river against the Boers on the high ground. French now assembled his three Cavalry Brigadiers, informed them of his plans and ordered Gordon's Brigade with its two batteries of Horse Artillery to form the first line, with four yards interval between each man, and to break through across the col in the direction of Kimberley. The second brigade under Broadwood was to follow in support in line, at 500 yards distance, while the first brigade under Porter, together with the remaining five batteries of Horse Artillery, which were to continue firing till the last possible moment, was to form the third line.

The two leading brigades at once deployed, and the horsemen, who were soon veiled in dense clouds of dust, dashed into the enemy's fire; the Divisional General riding at the head of the second line. The first line broke into a gallop about 1,600 yards from the enemy. After the dense clouds of dust caused by the 5,000 horses had somewhat dispersed, the three brigades were seen to rally nearly a mile beyond the enemy's position, and the road to Kimberley was open. The casualties amounted to only one officer and 18 men, killed and wounded, and about 30 horses. The remarkably small loss is explained chiefly by the great rapidity of the manoeuvre, which completely surprised the adversary.

The main body of Boers, though they only left 15 killed and wounded, fled towards Marsfontein, and a number of Boers unable to get their horses in time surrendered. A British Cavalry Officer described his impressions in the following language:—"The enterprise appeared to us at first as quite hopeless; we believed that only a few of us would come out of it alive; and had we made a similar attack at Aldershot, we should certainly have all been put out of action and have been looked upon as idiots. When we had galloped about $\frac{1}{4}$ of a mile, we received a very hot frontal and flanking fire, and I looked along the ranks expecting to see the men falling in masses, but I saw no one come down, although the rifle fire was crackling all around us; the feeling was wonderfully exciting just as in a good run to hounds."

Of course it must be argued that 900 men occupying about 2½ miles of front means a *very* thin line of fire, but the tactics of the present day advocate wide extensions, and unless troops are entrenched (in which case no sane man would ask cavalry to charge them) when the opportunity for a cavalry charge on infantry takes place, it is likely to be on an extended line.

To follow the action of French's Cavalry after the relief of Kimberley until the surrender of Cronje at Paardeberg is a most instructive lesson and shows the immense value that an independent force of cavalry skilfully employed and led may be to a Commander-in-Chief, in *assuring* success from a *dubious* outlook.

After the relief of Kimberley on the evening of the 15th February, the day of the charge at Klip Drift, General French fought the next day, 16th February, an indecisive action at Dronfield, some 10 miles north of Kimberley, with the hope of getting some insight into the Boer situation. At 11 p. m. *that* night he received news that Cronje was retreating eastward from *Marsfontein*, making for Bloemfontein, and at once perceived that the task for the already tired out cavalry division was to intercept and hold him, until Kitchener could come up and attack him in the rear. If there be one form of tactics in which the Boers excel, it is rearguard actions, and it was evident that unless Cronje *was* headed, his pursuers would be shaken off. Klip Drift *was* in our hands, and there were three drifts to the east by which Cronje could cross the Modder, Paardeberg about 7 miles, Koodoosrand 15 miles, and Makaur Drift 5 miles beyond that. *Cronje knew* that French's cavalry division had relieved Kimberley, but believed him to be engaged in a fruitless enterprise north of the town with a view to intercept him (Cronje) in case he moved in that direction. He knew that Lord Kitchener might be near *Paardeberg*, Makaur was too far away, so he decided to make for Koodoosrand. In the meantime General French, who, the moment he heard of Cronje's eastward move, had divined his plans to a nicety, immediately organised from his division a column of 1,200 men and horses most fit for work, and by 3 a. m. was making the best of his way on a diagonal line for Koodoosrand Drift, he wisely calculated that with a swift and trying march before him, it was better to have a selected small body than his whole tired out force. By 10-15 a. m., *i.e.*, in less than 2 hours from the time he received news of Cronje's eastward move, he was crossing the neck of the Kammelfontein ridge, 35 miles from Kimberley, the previous evening he had been in action at Dronfield, 12 miles north of Kimberley. It is a very fine example of the true cavalry spirit. At this time French learnt that Cronje's force was slowly moving eastwards along the north bank of the Modder. The situation was sufficiently critical, Cronje had at his disposal some 6,000 men and several field guns, while French had but 1,200 men and 2 batteries of Horse Artillery.

The actual position of Lord Kitchener was unknown. With characteristic rapidity of decision and audacity General French

determined upon immediate attack. An open plain bounded on the north by a semi-circle of hills stretched to Paardeberg. General French sent Broadwood's Brigade with their guns south, 2 squadrons with a battery of Horse Artillery to cover his left flank and seize a possible crossing E. of the convoy. The first gun came into action at 1 to 11, and the Boer Army halted dead in his tracks, and Cronje held the river bank and entrenched. About 4 p. m. an independent Boer force coming up from the south was observed heading along the ridge N.-W. of Koodoosrand Drift. A squadron of the 12th Lancers and a section of guns was sufficient to hold them in check. The cavalry bivouacked in the positions they held. The night must have been one of intense anxiety to French; with morning many deserters came in, and it was learnt that Cronje with his men, women and guns *were* in laager. As soon as the light was good enough French heliographed to Lord Kitchener the situation. During the next few days the enveloping circle was completed; the remainder of the Cavalry division was concentrated from Kimberley, all movements of the enemy from the south and eastwards were checked. During this time, which was one of continual engagements, the privations endured by men and horses were pitiful in the extreme; at one time the ration being limited to less than a single pound of oats for each horse, a biscuit and two spoonfuls of flour for each man. On the 27th the Boer General surrendered unconditionally. Thus by a rapid and skilful manoeuvre the cavalry from north of Kimberley had stayed and trapped Cronje's force for the oncoming British forces, and at the same time had kept Cronje's would-be rescuers at bay. In the leader we find a personal example of many qualities that are so desirable in a Cavalry Commander. A quick conception of the enemy's plans, the courage of his own convictions and the firmness to act at once upon them, physical fitness, and the energetic military spirit that is not afraid of hard work for man or horse, rapidity of decision, audacity to attack at once with inferior numbers while the enemy are still in a state of surprise. As regards that all-important matter for cavalry, the condition of men and horses during these operations, the men must have been pretty hard or they would have gone under more than they did. The horses, however, were in a bad way, the advance on Kimberley had been an almost waterless operation carried out in great heat. Many horses dropped from sheer exhaustion and had to be left on the veldt before reaching the Modder; gun horses fell in the traces, sacks of oats carried on spare horses had to be deserted and thrown away. On arrival at Kimberley the horses had covered over 100 miles in four days with insufficient food and rations, fighting, scouting, patrolling all the way. The troops French took with him to Kammelfontein (Broadwood's Brigade) had no rest whatever at Kimberley, and certainly none of the cavalry had *much* rest during the days they held Cronje in check from the west, and kept off the Boer reinforcements from S. and E. There was no hay at all, so the horses were put upon the wild

grass of the veldt, moistureless and with little nourishment in it, and there was considerable difficulty in finding enough of this.

It must be remembered too that when they *started* from their camps on 11th February, the horses had scarcely recovered from the effects of the sea voyage. On the 12th February the division had crossed the Modder River with 5,027 horses, when Cronje laid down his arms, 27th February, it numbered 3,533, that is to say, in about a fortnight 1,474 horses had succumbed, of which only about 100 to the bullet.

During the whole of the early part of 1900, the Cavalry in South Africa were in a bad way as regards their horses, and in March at the battle of Poplar Grove, perhaps the best opportunity that was offered during the war had to be allowed to pass. Owing to exhaustion they were obliged to look on inactive while the Boers in complete disorder fled past them some three miles off. These operations teach us that nothing is harder in war than to build up cavalry anew. There were too few horse depôts and not sufficient broken horses. Casualties were replaced with untrained horses; well trained men on unbroken horses are no longer cavalry. The difficulties of the horse question no doubt militated against *offensive* tactics on the part of the British Cavalry. Moreover, previous to this war only the smallest attention had been paid to dismounted action, and the men were still armed with the carbine. The training of the present day fortunately all tends in the right direction. Lord Roberts in his preface to the current Drill Book calls attention to the modifications forced upon the arm by the development in fire-arms and smokeless powder, and very rightly points out that when they learn to fight with the rifle as well as the sword they will become more valuable than ever. There is no other arm which is called upon to perform this double duty. Every Cavalry Officer should aim at making his men as good at fighting dismounted as infantry and at the same time the best cavalry. A high ideal no doubt, but a by no means impossible one. Consider the possibilities of a cavalry regiment well trained in dismounted duties in undulating suitable country. It is generally admitted that outflankment by fire is the tactical operation that causes an enemy, in large or small force, to shift, with men really handy at mounting and dismounting, and taught to ride over any ground, and with horses trained to stand, men can be trickled out of one position to another, at the gallop, with almost no loss in an incredibly short space of time, and there is no doubt that the enemy's fire at such a moving target is most ineffective. I have met many officers who have told me that in South Africa they never considered they took much risk in *galloping* across the front of the enemy's position at 700 to 800 yards. But it is all important to *gallop*, and for each man to take a separate path.

Tricky fighting is a noticeable characteristic of modern day war. We read of how the Japanese altered the whole characteristics of landscapes by shifting trees here and there, building mounds,

&c., in order to falsify the ranges of the Russian gunners, and tricky fighting to deceive the enemy, and give the mounted branch a chance of a dash at a surprised foe will, I hope, be largely adopted in the future. I see my audience is not entirely a cavalry one, and I daresay some of you have not yet had opportunities of studying the new Cavalry Drill Book, so I will shortly touch upon some of its most excellent reforms.

Great attention is given to the training of the recruit and remount, the old maxim that all great Cavalry reformers have insisted upon the complete individual control of the rider over his horse, under *all* circumstances, is the underlying principle.

"The recruit is to receive progressive and systematic instruction in physical drill, elementary riding, foot drill, musketry, equitation and troop drill. The training of the remount aims at making him a serviceable and comfortable horse; and the main test demanded is that he should be capable of being ridden at all paces with a slack rein like the Boer pony. Moreover, he is to be taught to stand without being held, and to pick up his own food when turned loose, knee-haltered. Equitation is entirely changed from the former system. Recruits are not to be allowed to ride without stirrups until they are good riders, and have full confidence in themselves, compare what I read you before on Frederick's instructions to his Cavalry. The hunting seat, and the hunting method of holding the reins takes the place of the old constrained military seat, and the hunting trot is adopted as the military trot, except for ceremonial purposes. Perhaps the greatest innovation lies in the riding school, which, in future, is to be used for the purpose of *teaching* men and horses only, and not as a place of drill, or display."

In estimating the lessons of the South African war it must be kept in mind that the English Cavalry were never opposed by true Cavalry, only by mounted infantry. In a campaign against any other civilised power the first task of the Cavalry will be the overthrow of the hostile Cavalry, than that of the other hostile arms.

The offensive rôle of Cavalry and the possibilities open to it have increased, not decreased, since they have been armed with rifles, and Cavalry must nowadays be trained to be equal to *all* duties—mounted and *dismounted*. The *principal advantage* that Cavalry possesses over mounted infantry is, that it can always turn effectively from the dismounted to the mounted attack. "The ideal cavalry," said the present Inspector-General of Cavalry of India, in his evidence before the War Commission, "is that which can fight on foot, *and* attack on horseback."

But not only for battle is there the necessity for a numerous as well as a well trained cavalry, but also for scouting and especially for pursuits. How potent would have been the effect of energetic pursuit after Modder River, and Poplar Grove; it was this inability to pursue, generally owing to insufficiency of numbers and the poor condition of the horses, that always gave the Boers opportunities

for establishing themselves in new positions for defence. The heavy sledge hammer blows of Cromwell, Seydlitz and Napoleon were altogether wanting in the Boer campaign.

Now let us consider what are the *chances* of cavalry success provided the *elementary* principles of employment of cavalry have been observed, and they have, through the natural accidents of ground or fighting, been brought within striking distance of their objective with intervening ground favourable to gallop over, their objective not patiently awaiting their onset but engaged in its own desperate struggle with its opposing containing force. Nowadays every British officer fires the annual course of target practice with his men, and those serving with native units know how difficult it is in Practice XII, Part II, to get off in one minute 15 rounds of magazine fire with really well-aimed fire. It is practically impossible. Also remember the extension that seems to be considered imperative nowadays. Will the number of small-bore bullets fired at the line of advancing cavalry from the time they are perceived until they have got home be many more than the number of *heavy* bullets against which they *successfully* competed in the old days? I have told you about Klip Drift, and how a British officer afterwards wrote: "We received a very hot frontal and flanking fire, and I looked along the ranks expecting to see men falling in masses, but I saw no one come down." As a matter of fact the flat trajectory of modern rifle favours a miss at a galloping target with anything but *very* carefully aimed fire. If a high velocity rifle be not held strictly parallel to the ground plane any unintentional elevation given lessens the probability of a hit. If the proper moment has been chosen for launching the cavalry the discipline and consequently the aim of its opponents will not be at their best. Colonel Maude writes—

"If a given space, say 500 yards, has to be crossed in face of 10,000 flying bullets, then it is quite immaterial whether these 10,000 are delivered by 5,000 men firing two rounds a minute, or 500 men firing twenty rounds in the same time; whereas it does matter very much indeed if each bullet which finds its billet drops horse or man dead in its tracks, or whether they can gallop on with half a dozen wounds for a mile or two before they fall to the ground."

The question of the increased range of the modern rifle must, of course, be considered, but I do not put that as one of paramount importance, for though cavalry may have to *wait* for their opportunity, they will, if well handled, at some time find means, either of ground or opportunity, to strike without undue warning.

With cavalry as with every other arm the conditions to ensure its success in the field are—

1. A knowledge of what the arm *can* accomplish.
2. A knowledge of the best means by which to prepare the arm for such accomplishment.

I have already touched a good deal upon the first condition. As regards the second I shall take the opportunity of again mentioning the importance of depôts from which a continual supply of

well-trained remounts and men will be forthcoming in time of war. The deficiency of these in South Africa, as I have already pointed out, caused many *admirable* opportunities for cavalry employment to be lost. However well trained and equipped a regiment may be when it takes the field, when death and disease commence to thin the original ranks, it will very speedily become a very different unit unless its remaining cadre is filled up again with equally well trained men and horses.

Festina lente is a maxim which applies with unusual force to cavalry, and unless we establish these training depôts in peace we shall certainly suffer for their deficiency in war. This is not a question for the regimental officers but for the nation. What the regimental officer has to learn is the best way to train his men and horses so that they may take the field at the highest attainable level of efficiency, and when he has got them there how to keep them in that state. The subject of horsemastership and how to keep his horses in condition is fortunately now part of the training of every regimental officer. Squadron commanders are responsible not only for the training of their horses after they have joined the ranks, but also for their condition, and I am sure all can testify to the truth of the old proverb "It is the master's eye that makes the horse grow fat;" in other words, supervision ensures efficiency. No doubt *responsibility*, too, helps to make the soldier, and the further the chain of responsibility is insisted upon, especially among the junior ranks, the better for the army at large. All tends the right way nowadays. Squadron commanders work through their troop leaders, they in their turn through the section leaders. War, no doubt, inevitably tends to decentralization and habits of self-reliance in the junior ranks, but these habits should be so instilled into the men during times of peace that they will have become second nature *before* war commences.

I should like here to comment upon a point which, in the present day, when it often seems to be thought that as soon as the bullets begin to whistle, the reins of discipline must be relaxed and every man allowed "to go as he pleases" has possibly not been sufficiently considered.

This is, that all the modern improvements in equipment, arms, and weapons of destruction must necessarily place the power of decision and direction more absolutely than ever in the hands of the commander of the force. Nowadays from a distance where he is safe and where he ought to be kept safe, by means of field telegraphs, heliographs, telephones and other forms of signalling, and communication the commander can be kept constantly informed of the position and action of every unit of his command. He can arrange for the concentration of overwhelming force, and owing to the greatly increased range of the weapons at his disposal he can arrange for the concentration of overwhelming fire at some decisive point. Thus, in opposition to decentralization throughout the units, we find the necessity for centralization in the commander.

With Cavalry this decentralisation must tend to increased mobility, and true mobility is the keynote of Cavalry efficiency.

I think we are all still perhaps a little prone to take the South African War as a model for good or evil, but that campaign no doubt taught us a lesson of suffering from *lack* of requisite mobility. What were we fighting there? Practically, an inefficient Cavalry screen, but efficient enough for Boer purposes, for our Cavalry were insufficient in numbers, and crippled from want of condition of the horses, while our Infantry were chained to the ground by the ox transport. We were watched everywhere and nearly always headed off; but how would the tables have been turned had we taken the field with a *numerical equality of efficient cavalry*, with the *superior mobility* that disciplined troops on efficient horses must possess over mounted farmers. *We* should have done the watching and *we* should have done the heading off, and it is the Boers who would have had to dismount to attack, and *we*, who would have had the advantages of fixed rests and known ranges, and whilst one portion of our mobile force held them in check in front, it would have been *our* men that would have slipped round and captured the heavy ox-waggon convoys.

The greater the mobility, the greater the advantages conferred by the new improved weapons. Superior mobility means the easy concentration of superior numbers against the decisive point, and the greater the *distance* from which these numbers can make their *fire* felt, the greater the uncertainty of the slower moving side as regards the degree of superiority by which they are confronted, and smokeless powder of course enormously increases this advantage. The slower moving unit necessarily has to fight on interior lines, and the chances of bullets from converging fire hitting the target *increase* with the mobility of the assailant, while conversely, with the excess of mobility, the target becomes smaller, scattered, and more difficult to hit.

I will sum up this lecture with the following counsel of perfection. To obtain and maintain cavalry efficiency first insist upon the complete obedience of the horse to the rider; secondly, on the knowledge of horsemastership throughout all ranks; thirdly, decentralisation throughout units and a training to take responsibility amongst junior ranks; lastly, a thorough training of how to fight both on horseback and dismounted. Our Cavalry will then *commence* a campaign efficient, instead of perchance becoming so, through *bitter* experience towards the end.

At the conclusion of the lecture the Chairman, Sir Edmond Elles, made the following remarks:—

"Gentlemen, I am sure you will all regret with me that His Excellency the Commander-in-Chief was unable to preside to-day and perhaps give you his experience with the Cavalry arm in South Africa, and also on the use of Cavalry in the future. I am afraid that my experience is not recent. I think we all expected striking

results from the Russian Cavalry in the present war. We were all aware that the Cavalry was the weakest spot in the Japanese organisation, that they are not horsemen, and that Japan is not a horse country. I think many of us would have predicted that the boasted Cossack Cavalry would have done great damage to roads and to lines of communication. The reconnaissance work of the Russians has been weak and their striking power hopelessly inefficient.

"The Cossacks have been rather held out to us as a power, should we ever meet Russia on or over our frontier, but, judging from what we have heard and from what we know of the Indian Cavalry, we should meet them with the greatest confidence. (Applause.) During my service I have seen a good deal of the Indian Cavalry, and I would like to take this public opportunity of testifying my appreciation of that splendid service—the finest light cavalry in the world (applause), noted for its mobility, horsemanship and horsemastership, and led by professional soldiers of energy and dash, amongst whose ranks it is indeed a pleasure to me to say I have many friends.

"I know of no point upon which the Cossack can claim superiority, unless it be in raiding peaceful villages and looting. I believe that in these qualities the Cossack excels.

"I feel sure that should our sowars ever meet them they will give them a very warm reception. (Applause.)

"I will now thank Colonel Western for his absorbing lecture, in which I feel sure the audience will join me."

LINE OF COMMUNICATION TRANSPORT.

BY CAPTAIN F. W. HAWKS, SUPPLY AND TRANSPORT CORPS.

The subject of Line of Communication Transport for operations conducted in uncivilised or semi-civilised countries, possessing no railways, telegraphs, canals, nor even good roads, is one of great difficulty. In order to realise fully the magnitude of the task to be undertaken, in organising an efficient and reliable train of supplies through a country such as I wish to illustrate, it would be as well first to consider briefly the arrangements which would usually be made in civilised, or, say, Western European countries.

The problem in both cases is to follow up and reach a perhaps steadily advancing army with a sufficient and never-failing supply of necessities of all kinds, and to legislate for the ceaseless changes in arrangements which must be entailed by the continually varying movements of its component parts. No matter how difficult it may be to arrange this, no matter what obstacles have to be overcome before it can be accomplished, an efficient system must be established, for upon it hangs the success of the whole of the operations. Consider the multifarious items to be forwarded to the front, comprising under general heads not provisions only but ammunition, clothing, and medical supplies, ordnance and engineering stores, treasure and a host of other miscellaneous articles. It being quite out of the question to calculate beforehand with absolute accuracy the exact weight of the stores to be carried, it will be incumbent upon the Director of Line of Communication Transport to overestimate the requirements, and, secondly, after having done this and found, as he may expect to do, that his resources are still insufficient, to exercise a nice discrimination between the urgent demands of the various departments, all clamouring to have their particular supplies forwarded at once. The temporary value of one class of supply over another can only be properly appreciated at the front, and the Director must therefore be guided by advices from thence.

As to how the requirements of transport are to be provided: In a civilised country we may look to find good broad roads, canals, etc., and, above all, railways, which may usefully be turned to account in our preparations. We shall probably be able to find a considerable amount of supplies of all kinds, at any rate at first, and this will save enormous labour in Line of Communication Transport: wagons will also doubtless be available, which may be requisitioned to supplement our own transport. All is, however, not plain sailing; there will be many difficulties to contend with. Roads may indeed be found, leading in the direction in which we wish to push forward our supplies, but this is by no means so certain with railways,

which may run to all the cardinal points of the compass except the right one. Moreover, the utility of a railway is very easily temporarily destroyed, especially by an enemy acting in his own country; extensive works may consequently have to be undertaken before they can be rendered fit for use; new lines and diversions will very probably be necessitated on account of tunnels having been blown in, or because of strongly built forts blocking the way. The invader will generally have to make provision both of staff to work the line and of rolling stock to replace that which has been withdrawn or destroyed by the enemy. Thus there will always be considerable delay before this means of transport can be relied on, and this gap must be filled in by the employment of human or animal carriage, of which indeed no railway can ever be quite independent. It would be erroneous to regard the acquisition of a railway as entirely solving the great difficulty of supply; it may be far from being so in practice. It is, however, intrinsically invaluable, nor could the huge armies which are nowadays put in the field be properly subsisted for any length of time by any other known method of transport. Damages to the line must be repaired with energy and rapidity, efficient measures must be taken for guarding it, ingenuity must be employed to remedy defects and overcome obstacles, and then, with its great carrying power, aided by such other means of transport as may be available, such as light railways, canals, navigable rivers, etc., it will prove a great stride to the solution of that most difficult problem, Line of Communication Supply.

We may accordingly look for the following advantages in the conduct of operations in civilised countries:—

- (1) Use of railways and telegraphs;
- (2) Good roads, with wagons, animals and human labour at hand to requisition.
- (3) Supplies, especially those important items, fuel and fodder, available to a greater or lesser extent in the theatre of operations;
- (4) Other adventitious aids, such as may opportunely come to hand, *e. g.*, canals and rivers with barges, boats and steamers on their waters; light railways; material and tools for the construction of railways and roads; traction engines, etc.

From this pleasant picture of labour lightened and difficulties in a fair way to be overcome, we turn to the consideration of what is to be done in invading a country under the following conditions:—

Railways ending at the frontier; no prospect of finding any beyond, nor indeed of carrying on their construction without having to overcome tremendous natural obstacles.

Bad and indifferent roads, hardly to be dignified as such, fit here and there for wheel traffic, but mostly narrow, unmetalled hill tracks.

Supplies very limited; fuel and fodder scarce, the latter only obtainable in any quantity at certain times of the year.

An exiguous amount of carriage and human labour available for requisition; a sparsely inhabited land with a poor and indigent people, living for the most part a hand to mouth existence.

Puzzle:—To feed and maintain a large army, anything from 100 to 200 miles from the frontier of its ultimate base.

Only by the most carefully matured plans in peace can any effective arrangements be made. All information must be carefully collated, deductions must be seriously weighed, calculations allowing for all kinds of unforeseen occurrences must be methodically worked out; unexpected situations and emergencies must be provided for. Without a really sound basis on which to found plans and build up calculations, it is evident that the work of preparation will be conducted in Cimmerian darkness, and that no really reliable estimates can be formed. The information upon which alone any reasonable arrangements can be made is only derivable from many different sources, and the Transport Officer, charged with the preparation of Line of Communication schemes, must be assisted by the best advice, widest experience and most expert opinions available in each and every line. Thus it is absolutely essential to the foundation of his arrangements that he should know—

(a) The strength and composition of the force he has to provide for; the probable time its various parts will take to concentrate, and in what order they will move forward; its objectives and generally the strategic scheme of operations;

(b) The estimated requirements of the force, as foreseen by the Supply, Medical, Ordnance and Engineer authorities.

(c) The nature of the country through which the supplies must be conveyed; its communications, roads (or lack of roads), rivers, towns, villages, etc.; its resources at various seasons of the year; its climate and the disposition and habits of its people. In fact, he wants a complete gazetteer with every particle of information about the country.

The Transport Officer, to whom is entrusted this most important branch of the preparations for war, must be well informed; no intelligence that may come to hand about the probable theatre of war and no ideas that may be formulated as to the plans for meeting the enemy should be concealed from him. In fact, as both the information he wants and that which he can supply is equally important to other officers engaged in strategical, mobilisation, and intelligence problems, it is essential for the efficient and rapid despatch of business that all who are engaged on the one great question of preparation for war should work together and in close consultation. The tasks of these officers are to think out combinations of plans and to formulate projects; to study deeply the probable theatre of war, and to elaborate ideas for meeting any emergency that may arise. For the effective performance of their duties they should have absolute freedom to criticise arrangements, suggest improvements and call authoritatively for any information on any

subject. Each officer has, while working with the others, his own peculiar line to study; the strategist considers and proposes plans for the movements of the army, and matures schemes of the dispositions to overthrow the enemy; the intelligence officer, by every possible and practicable means, strives to obtain the latest and most accurate information regarding the probable theatre of operations, its people and resources; the engineer perfects his designs for important works to be executed and advises as to the material necessary to be laid in for each purpose; the mobilisation expert draws up plans for concentration, while the transport officer is occupied in preparing schemes to ensure that his arrangements shall not be found wanting no matter to what severe test they may be subjected.

As we are here considering only Line of Communication Transport arrangements, we may follow the Transport Officer in the broad lines of his particular work; to trace all the developments and study all the minutiae of the varying and multifarious details would be far beyond the scope of the present article.

Calculations of the amount of transport required on a given Line of Communications, to be of any value, must be most patiently and conscientiously worked out; the longer the line, the more laborious and intricate in proportion does the estimate become. Staging tables have indeed been prepared and will show at a glance the number of animals required on any given number of stages for any unit of weight to be conveyed, but too much reliance cannot be placed upon these, except for the purpose of arriving at the roughest idea of the amount of transport required. There are many items to be taken into account, and many side issues to be dealt with of which the straightforward tables cannot be expected to take cognisance. Advanced and intermediate depôts have to be formed, garrisons of posts will differ in strength according to their importance in the scheme of defence, and the resources of different localities will vary in every particular. In a practical scheme all these points must be considered and dealt with. Working on the "exchanging" system (*viz.*, that of the relief of transport half way between stages) the calculation of the amount of transport required on a Line of Communication will be initiated from the most advanced magazine, and so backwards through depôts and stages to the base. The destination (or most distant magazine) will have to be provided with sufficient transport to bring daily its supplies from a point half way back to the stage next on the line; this stage must have adequate carriage, not only to send forward the stores required at destination, but to bring up from half way to the next post the supplies it requires for consumption by its own garrison and animals plus the stores it will have next day to forward to the terminal station. The posts will normally be placed on an average of ten miles apart; the transport at any given post will therefore be divided into two parts, the one working back to bring up supplies from five miles away, and the other working forward to push supplies

half way to the post ahead, returning empty. Thus at every stage its own peculiar circumstances must be taken into account, and it is fairly certain that they will be dissimilar in every instance. The classes of transport at and between stages will also differ according to the nature of the country; what can be carried in carts at one place may in another have to be transferred to pack animals; and that which in some localities can be hauled by traction engines may in others have to be conveyed by coolies and hand carts. Other methods of working the transportation of supplies and stores on Lines of Communication are the staging and convoy systems. It is evident that until telegraph or other means of speedy communication are in full working order it will be difficult to work on the exchanging system. The staging system, which consists of loaded transport going right through from one stage to another, returning empty the next day, may often have to be adopted, but it possesses this disadvantage as compared with the exchanging method, that men are not able to return to their own lines the same day, and it is, therefore, necessary for them to take their kits with them, thus entailing the conveyance of extra weight. The convoy system has the same disadvantage, but it will often have to be resorted to. It consists in making up a train of transport to go through from the base or from a *dépôt* to reach the troops or some fixed point at the front. It is necessarily uneconomical, but it is frequently the only workable system.

The Transport Officer, in possession of all the technical details, expert advice and opinions can afford, commences, step by step, to build up his major plans. The primarily important points of the proposition easily divide themselves under three heads—

- (1) The nature of the country;
- (2) The weight of stores and supplies to be carried;
- (3) The method of transporting them.

Points (2) and (3) depend, it will be observed, much upon (1). The more fertile the country and the greater the resources it contains, the less supplies to be laboriously carried up the long line; the easier the country the more economically can tractive power be applied. The first step is therefore a consideration of a carefully compiled chart, which will have been elaborated by the Intelligence Officer. This will show, on a large scale, the capabilities of the different roads, which, for easy reference, might be coloured to indicate the various conditions. For instance, in some places only pack transport can be used, in others vehicles, either mechanical or animal drawn, may be employed; here the road will only bear a very limited weight, there it is narrow and difficult and permits only the use of coolies and light hand carts; here is a river or canal which will conveniently relieve congestion on the road, there is an obstacle impassable at certain seasons of the year, and so on. But it is necessary to look further ahead and to decide how soon, after Sappers and Pioneers have improved the road, the first temporary or make-shift arrangements may be dispensed with, and more economical

means of transport adopted. For this it will be necessary to have a compiled forecast prepared as accurately as possible by engineering experts. This would show on the various stages of the road within what time effective arrangements can be made for improvements, where railways can be made and how long it will take to construct them, what must be done and what delay will be occasioned before obstacles can be reduced and surmounted. This is a matter of difficult calculation, and will no doubt be largely conjectural, but it will serve as a guide.

With regard to the weight of stores to be conveyed, Major Callwell's remarks in "Small Wars" are instructive—"Supply is a matter of calculation. For a given force proceeding a given distance at a given rate, the amount that will be required is a question of figures." He goes on to qualify this as regards war in uncivilised countries. This is all quite true, so far as the conditions stated go, but the context shows that the word "Supply" has been used here in the narrow sense of food supply only. Supply by Lines of Communication is complicated by considerations of many other necessities which must be pushed forward, and it is extremely difficult to arrive at any estimate of what these are likely to amount to. Then, as has been remarked above, it is not merely a question of following up an advancing army, but of reaching it and maintaining it in its ever varying movements in the theatre of war. The unfortunate contretemps which happened when the River Column was marching from Hamdab to Korti (Nile Expedition, 1884-85), with 100 days' provisions, one-third of which was found to be bad, is a small item in the host of unlucky accidents that may occur. However, it is necessary to base the working plan on something, so, after consultation with all the various departments, and deliberation on all conceivable circumstances and obstacles that may arise, always keeping in view the golden rule of overestimate, some conclusions, to be varied to accord with different conditions, but sufficiently constant to serve as a guide, will have been arrived at. Now comes in one of the qualifications:—"the extent to which the theatre of war itself may assist as regards providing supplies is undetermined." Well-informed intelligence regarding the country is essential here. From compiled records and carefully sifted reports a fairly accurate estimate of the supplies of all kinds obtainable at each season of the year may be afforded, and the most likely localities to provide fuel, fodder, grain, cattle, etc., may perhaps be ascertained. Thus, observing the circumstances of each season of the year, a just computation of the deductions which may with safety be made from the road-conveyed stores, will with some degree of accuracy be made. The strategist should indicate as closely as may be feasible the original and proposed subsequent movements of the army, the positions which they will, at any rate to commence with, occupy or endeavour to seize, the dispositions in case of initial success, or a possible retreat. It will be practicable only to indicate initial movements with any certainty; subsequent developments must be

reckoned on probabilities: it is useless to endeavour to legislate for extravagant possibilities.

In the consideration of the third point the Intelligence Officer can also play a considerable part. For by the advice the Transport Officer has received from him as to the nature of the country, so he is guided in determining the different classes of transport which he must concentrate at the base for the conveyance of supplies to the front. Major Callwell ("Small Wars") remarks that small wars are often campaigns against nature rather than against hostile armies, alluding particularly to the fact that they are mostly carried on in roadless and inhospitable tracts. The sterility of the country makes the question of supply one of great difficulty, and the necessity for carrying all the requisites of life swells the transport service to huge and unwieldy proportions. But if this embarrassment is so apparent in a small war, where for want of better arrangements liberties may be and have not infrequently been taken with the Line of Communications (e.g., Sir D. Stewart's march from Kandahar to Kabul, Sir F. Roberts' march from Kabul to Kandahar, and his advance up the Kurram Valley to Kabul in the last Afghan War), how much more must it be the case when the opposition of a powerful foe necessitates the maintenance of a large army in such a country, a couple of hundred miles from its base? The fodder difficulty alone precludes any attempt to keep up such a line with animal transport only. Consider what the remunerative load of a pack animal would be supposing that it had to carry its own provisions (including fodder) and the rations of its attendant over a march of 15 stages. A camel would deliver about 80 lbs. at destination and a mule would be on extremely short commons long before it got there. A cart, with the animals on a very low scale of feed, would put in less than five maunds; but in none of these cases could the animals get back again to the base. Any shortage in the water-supply along the route to be traversed would present another problem eminently difficult of solution. Disaster, as history plainly shows, must ensue from any failure in the arrangements for the supply of water.

Appreciating therefore the impracticability of any plans involving the provision of enormous supplies which the theatre of operations either does not produce, or provides temporarily for a short time only, it is obviously necessary to consider and determine what form or combination of forms of mechanical methods of transit can best be adopted to help out the animal carriage. For the provision of mechanical transport alone is not enough. Animal transport will be required in places where it is impracticable for mechanical means to be used, or where any interruption to the latter, such as may frequently occur on railways, stops the regular flow of supplies to the front. Animal transport will also under any circumstances be necessary to convey stores from the terminal station of the mechanical transport. The army cannot be bound down by the railway; it must be in a position to move freely hither and thither; and, to reach the

troops wherever they may be, reliance must to a great extent be placed on human or animal means of transport.

Having taken all things into consideration, remembering the strict limitations which may be imposed by the fodder difficulty upon the number of animals to be placed on the line, and deciding carefully according to the nature of the country and the existence, or lack, of supplies in each and every locality, the Transport Officer may proceed to parcel out the line provisionally and to allot to each stage, or portion of stage, the class of transport most suitable to its own peculiar conditions. It is obviously much more economical and remunerative to employ animals in draught than in pack work. Wheeled transport is more economical in every way, it occupies less space on the line of march and effects an important reduction in the number of beasts to be used, and as regards the animals themselves, it is much less wearisome and wearing. A pack animal may, and often does, have to stand for hours under its load—a most exhausting process. Wheeled transport will therefore be used whenever possible, and the utilisation of pack (for Line of Communication work) relegated to such localities where the narrowness of the track or its difficult nature renders the first-named method impracticable.

We will assume that reasonable conclusions have been arrived at on primarily important points, and will now turn our attention more particularly to the methods employed in transporting stores and supplies on Lines of Communication.

The quality of the various sections of the road and their suitability for the different classes of transport being known, the pros and cons of mechanical, animal, human or water carriage and the circumstances under which each kind may best and most economically be employed remain to be considered. I shall endeavour to classify them into a sort of table of precedence, naming them as far as possible in order of utility; but it must always be borne in mind that though one form of transport may be far more desirable than another, yet in order to derive full benefit from, say, railways, they must always be used in combination or in connection with certain forms of human or animal carriage. Thus the ideal arrangement to be aimed at is the judicious blending of different forms of transport to suit the varying conditions.

LAND TRANSPORT.

Mechanical.

- (1) Railways.
- (2) Light or portable railways and tramways.
- (3) Traction or motor engines.

Human and Animal.

- (4) Tramways.
- (5) Wagons or carts, with teams of animals, or double-draught.
- (6) Carts, single-draught.

- (7) Light or hand carts, wheel-barrows, etc.
- (8) Pack animals.
- (9) Coolies.

(N.B.—It is to be remembered that the above classification is purely an economical one, a descending scale of general utility. It will often happen that, according to the nature of the country, coolies, for instance, might have an adventitious value above carts.)

INLAND WATER TRANSPORT.

- (1) Steamers.
- (2) Barges or boats.

Inland water transport, where it can advantageously be made use of, would in comparison of value be placed above human and animal land transport. So far as mechanical methods of propulsion are concerned, water transport may be placed on a par with land. The circumstances being so widely different, it will, however, be considered after land transport has been discussed.

RAILWAYS.

"The problem of transport, unless a railway or river be available, taxes the ability of the most experienced."—(Henderson.) "Railways used in the furtherance of military operations expedite considerably the concentration of an army; facilitate the supply of war materials, stores and provisions; quicken the removal of the sick and wounded, etc."—(Furse.)

It is an axiom hardly needing comment that a railway is the most valuable form of transport, and the most potent auxiliary in Line of Communication arrangements yet known.

Students of military history will have observed the rapid development of its utilisation and the increasing dependence which has been placed on it since, say, 1859. The descriptions of all modern civilised warfare are full of allusions to it and its vital importance to the operations: it has, in fine, been recognised that the huge armies of the present day cannot be maintained in the Field without its help. Current events confirm this beyond the possibility of doubt.

In the Franco-Prussian war the German commanders were fortunate in so far that the French system of railways was on the whole favourable to the importation of supplies from their ultimate base. Without the help of the additional lines which the fall of Metz opened out, the besieging forces around Paris would have had to retire. After the fall of Metz (on 27th of October 1870) the First Army (Manteuffel) moving to support the Army of the Meuse was on short commons owing to the fact that supplies from Cologne and Coblenz could not be brought up by rail, as was first expected, and road transport had to be entirely relied on. A most practical object lesson in the value of a railway as a means of supply is afforded by the use made of the Louisville-Nashville-Atlanta Railway

by General Sherman in the Atlanta campaign; he depended on it entirely for his support for six and a half months. Take also the use made of the *single track* Trans-Siberian Railway in the present Russo-Japanese war. From figures given in the *Russki Invalid*, not less than 182 wagons (66 passengers and 116 goods), i.e., seven to eight trains in the 24 hours, arrived daily, up to last March, at Kharbin. Besides troops and stores were also conveyed to Vladivostok. During 13 months 13,087 officers, 761,467 rank and file, 146,408 horses, 1,521 guns, and nearly 500,000 tons of stores have been carried to Kharbin by this railway.*

A railway train of 30 wagons can convey 8,000 maunds of supplies, say, 300 to 400 miles in the 24 hours; the great weight-bearing capabilities of a railway together with the celerity with which stores can be delivered or any immediate necessities be brought up and the regularity of working which its use affords, are most important factors in the success of operations. If therefore it should appear likely that a serious war will have to be waged in a country still destitute of this most important modern development, efforts should if possible be made to bring to pass the construction of a railway therein beforehand, in time of peace; or, if this is not feasible, it should be laid up to the very frontier, ensuring by the maintenance of material, and careful survey of the country beyond, that nothing which prudent preparation might have foreseen and provided for shall delay its construction on the outbreak of hostilities. The Transport Officer concerned with Line of Communication calculations should therefore be in possession of all facts in this connection, which have such a far-reaching effect upon all his arrangements.

If no railway exists he will want to know how long it will take after the commencement of operations before the different sections of it will be in working order, and he must decide upon the class of transport he will utilise until the development of the railway line renders the further employment of the temporary substitute unnecessary. His map will therefore clearly show the extent of the proposed railway, and the localities in which it will be laid, with full information as to the periods which must elapse before he can depend upon its help in his plans. A very efficient substitute for it is next on the list.

LIGHT OR PORTABLE RAILWAYS.

These are a very useful help in transport operations, and more especially at the commencement of a campaign in a country where railways do not exist. To lay a railway proper is a very heavy and lengthy operation. It has, however, often to be undertaken, even in countries where railways already exist, but, should it be hastily and

* Journal of the R. U. S. I., May, 1905: Article translated from the "Russian Gazette" by Lieut. W. H. Bingham, 69th Punjabis.

imperfectly laid, as is not infrequently the case, it is a source of much trouble and inconvenience. (Note Banks' "pursuit" of Jackson in March 1862, and the difficulties he experienced owing to the line upon which he was dependent becoming unserviceable.)

In 1870 the Germans constructed the Remilly-Pont-À-Mousson line, which, however, was not found entirely satisfactory for heavy traffic. In the extension of the Wady-Halfa line in 1885 progress was made at the rate of only from a half to three-quarters of a mile a day, but in this case there was an insufficiency of material.

In a flat easy country, provided the requisite stores are available, construction could be pushed on, say, at the rate of a mile a day, but in a difficult, mountainous land, the building of embankments, viaducts, bridges, and the construction of tunnels, must necessarily retard considerably the rate of construction. Many systems of light railways have been devised, and, in considering them all, the Décauville Patent Portable Railway seems to me of pre-eminent utility.

The Décauville Line.—The best gauge would be either 16 or 20 inches for use on narrow hill roads. The Russians used a 24-inch gauge; 16 to 20 inches would be better for narrow hill tracks. Thirty gauge is unnecessarily broad and heavy; a 16-inch gauge is much more handy for laying and is sufficient. What is wanted is not a permanent form of railway, but the lightest form of railroad consistent with practical needs, capable of being put down and taken up in the shortest time possible and suitable for quick transference to any locality where it may be required. As to the loads to be carried and the weight of the wagons, this must be decided by the circumstances of the case. Line "No. 7" can be used by a 3½-ton locomotive (and, of course, with animal traction) and can carry loads of 4 tons per wagon. But there will be many places where the road will not be capable of bearing so heavy a weight as this, and corresponding reductions must accordingly be made. The rails are rivetted to six steel sleepers (*dished* to give greater resisting power) in lengths of 16 ft. 5 in.; the fish-plates at the end of one section act as guides and locks to the base-plates at the end of the next section, and this gives quite sufficient security for a temporary system; for a permanent system the sections can be bolted together with the fish-plate bolts. The lines are perfectly portable, and one man can carry a section-length with ease. Curves and crossings are also procurable.

It is claimed that the lines require no ballasted road, can be laid on any class of soil, and that the operation of laying is very rapid; it is, in fact, stated that ten miles, for temporary work, can be laid in one day by from 300 to 350 trained men. As a forerunner in localities where a permanent broad-gauge railway is in course of construction, such a line, as a preliminary make-shift, would be invaluable. For use as a tramway on rough roads this line seems particularly suitable, one bullock could undoubtedly haul 20 maunds on such a track, and the breaking up of the road would be

avoided. In places where the roads are strong, hard and broad (*viz.*, in base depôts, etc), locomotives could be very usefully employed. (A 6-ton locomotive will draw a load of 25 tons up a slope of 1 in 66, at six miles an hour.) A wagon with platform mounted on bogies, covered with strong waterproof canvas, is recommended for the transport of troops and stores generally. The space in breadth of road occupied would be about 5 feet, and, in working the line on the staging system, room would always be available for crossings.

In the formation of depôts in advance of the base a light line would be very useful, for, supposing it to be impracticable or unnecessary to lay it along the whole length of the communications, after the formation of one depôt has been completed, it could be transported further forward to continue the formation of more advanced depôts. The Russians adopted this system in Central Asia.

As regards cost, though this should be a secondary consideration when preparation for, and convenience in, war is under deliberation, this would be somewhat as follows:—Taking a 20-inch gauge, and allowing for the line to bear weight varying from 10 to 110 maunds per wagon, and supposing that we want ten 4-ton wagons and a proportion of locomotives per mile, then for 50 miles the cost would be roughly 13½ lakhs. If, however, we substitute animal traction for locomotive, and allow that one bullock can haul 20 maunds 10 miles, then the whole outfit (including bullocks) will cost less than 9½ lakhs. Five hundred 4-ton wagons will carry 56,000 maunds, which is the lifting capacity of 14 bullock-trains comprising 12,320 bullocks and 5,600 carts, costing approximately 17 lakhs! As to considerations of road space, I have already shown the advantage in the breadth occupied by the railway wagons (a cart requires 7 ft. 6 in. frontage); the advantage in reduction of length is still greater. For, a bullock-train carrying 4,000 maunds will occupy 1½ miles of road space, whereas 36 wagons at 4 tons each (4,000 maunds) will not take half a mile. (Seventy-two wagons at 2 tons each, *viz.*, 4,000 maunds, will take about 1,000 yards.)

A light railway would afford an economical system of supply at concentration camps and manœuvres. The unreality, caused by the formation of depôts in the theatre of manœuvres, and the absolute limitation they put (or, rather the embargo they lay) upon the successful working of the ideas and plans of commanders would, at any rate to a great extent, be overcome by the utilisation of this means of supply.

TRACTION ENGINES.

History does not help much as regards the utilisation of this means of transport in war. At one period of the Franco-German campaign two 40 H.P. traction engines were worked on the line Ponty-Mousson-Commercy, and were useful in hauling large trains of supplies to the railway at the latter point. Also in the last South African war, engines were used to some extent. But the conditions.

in both these cases allowed the use of good hard roads. Powerful heavy engines, which can be used economically on hard, macadamised roads, are obviously out of place on narrow, soft hill tracks, cut out of the mountain side, or built up with stone and earthen revetments. Even with engines not weighing more than five or six tons, great care will have to be exercised in deciding upon the different stages where they can be worked. Another consideration to be reckoned with is the possible scarcity of fuel and water, the conveyance of stocks of which would greatly reduce the remunerative load of the engines. However aided by animal transport in places where the nature of the ground absolutely forbids their employment, traction engines of suitable type will render invaluable assistance and may be depended upon to go far towards overcoming the difficulties of Line of Communication Transport. As for the fuel and water difficulty, this again is a matter for careful selection of locality. The internal combustion engine can, however, be used in places where these commodities are scarce since they require but little water and their consumption of oil will not form a very large charge on the despatches from the base.

To compare for a moment the respective merits of internal combustion motor engines and transport bullock-carts:—A 5-ton 40 B. H. P. engine can haul a gross load of 5 tons under any practicable conditions; a pair of bullocks in similar circumstances can draw a cart with a remunerative load of 10 maunds; that is to say that one engine is equal to 14 bullock-carts. But the engine can travel, say, an average of five miles an hour (eight on the level), while the cart goes $1\frac{1}{2}$ miles in the same time; therefore, a fair average day's work for the former is certainly 40 miles as against 10 miles (the normal calculation of a stage) performed by the latter; therefore, one engine is equal to 56 bullock-carts, or, in other words, the value of an engine is 5,600 maund-miles a day as against 100 maund-miles, the daily value of a bullock-cart. As to further advantages, in addition to the full load (5 to 10 maunds) the engine can carry sufficient fuel, lubricants and water to run 100 miles, and with some slight increase to the weight, by means of utilisation of vacant space, extra fuel for a further 200 miles; as compared with animals it may be said to be practically invulnerable against rifle fire; it occupies a fraction of the space taken up by its equivalent in bullock-carts (the tractor itself occupies the space of one cart only and requires less breadth of road); though it may be temporarily thrown out of work for repairs, yet it is inherently immune from those unfortunate and unforeseen calamities which may paralyse action and come very near to causing absolute disaster: I allude to epizootic diseases, outbreaks of which are unluckily so common. The matter of cost does not really affect the question; it is hardly feasible to compare the cost of upkeep, especially in war; but as to prime outlay:—56 carts with 112 bullocks and gear would cost Rs. 16,500, or £1,100, while the tractor, costing £850 in England, with two trailers, would probably cost about the same,

HUMAN AND ANIMAL TRANSPORT.

A man or animal can pull at least four times as much as he can carry; pack transport will not therefore be employed on Lines of Communication unless it is impracticable to use draught. The space occupied by pack mules carrying, say, 100 maunds would be $2\frac{1}{2}$ times as great as that taken up by carts carrying a similar amount. Camel carriage is more economical in length of road occupied, but still it takes half as much space again as carts. Pack animals have this advantage that they move quicker than carts: for instance, a pack mule will go three-miles while a mule-cart goes $2\frac{1}{2}$; and the pace of a camel, though slower than that of a mule-cart, yet exceeds that of a bullock-cart by half a mile an hour. As to frontage, an important point on narrow hill roads, the pack mule is more economical in breadth of space occupied than a double-draught cart, but camels take up as much as, or more than, a 2-bullock or 2-pony vehicle. If roads are very narrow, then the last resource is the cooly, and there are several points, very much in favour of human means of transport, which may conveniently be alluded to at once. Taking a camel as the most economical agency for pack work, let us compare him, as a method of transport, with human power. Two coolies can, using a light hand-cart, propel nearly as much as one camel can carry. From a merely pecuniary point of view it may appear that camels are cheaper (provided their death rate is of normal proportions), and, omitting fodder, so long as it is locally obtainable, the weight of daily ration consumed by him, with his proportion of attendant, is about the same as that required by two men. But supposing that supplies for neither man nor beast are procurable on the spot, then the use of the latter becomes a practical impossibility: a camel consumes four times as much weight of food daily as two men do. It is this contingency we must guard against, and the camel, as a means of transport in a barren, mountainous country, should be discarded in favour of cooly-propelled hand-vehicles, or light tramways. It is certain that wherever a camel can go a hand-cart can travel. The latter moreover has this great advantage over the former that it can easily be got over difficult places by portage. The vehicle should be so constructed that the body may be easily detachable from the axle; two men would thus lift the load over an obstacle, subsequently returning for the wheels. As for the single-draught cart, it has its uses: it is easy to load and will travel over very difficult country. The animal, used to haul it, will, however, consume nearly as much weight of food as a camel. As a method of transporting supplies short distances from a rail-head to a light rail or tramway terminus, or from a stage or dépôt to troops near at hand, single-draught carts might conveniently be employed. *General work on Lines of Communication should be purely mechanical*, or if this is not feasible, then animals should be employed on *light tramways*. This latter point having already been discussed, we pass to a brief description of draught and pack transport.

The animals principally employed in draught will be—bullocks, mules, ponies, perhaps donkeys and occasionally camels. The bullock will haul the bigger load, but it is much slower than either the mule or pony in draught. So far as price is concerned the initial cost of a bullock is less than a third that of a pony and still less than that of a mule: the upkeep in food only would be about the same. If circumstances unfortunately compel the utilisation of large quantities of animal draught transport, then this should comprise a judicious mixture of the bullock and mule or pony classes. Each species has its own peculiar diseases, and, should the whole transport be of one class, a severe outbreak of epizootic disease would cripple the entire arrangements and infallibly cause disaster to troops operating in an unproductive country. Pony draught transport (mules will rarely be available) should be used nearest the troops, that is to say, between the most adjacent magazine and the regimental or departmental expense trains, because, being faster moving than bullock, it could in emergency, by rapid marches, catch the troops up, or when required, keep up with them as a movable magazine. Should the troops have moved too far from the most advanced depôt or stage, then this cart-transport, forming the reserve train, must bring up supplies from the nearest locality where it may be available by requisition.

Large donkeys may be used in carts, and would be useful in single-draught vehicle. They are generally inferior in rapidity of movement to mules and ponies.

Camels are not really draught animals at all, but have been occasionally used as such. On hard level ground camels will draw about eight maunds of remunerative load, but would be entirely out of place as draught animals in hilly country or over damp, heavy ground.

Wheel-barrows are an effective means of conveyance in the hands of men able to use them. Perhaps the best example of this class of vehicle is found in China, and has of late been considerably used in Manchuria. It has a large single wheel in the middle, shielded by wooden planking; the loads are placed on shelves on each side of the wheel, and it is propelled by one man between the shafts, generally assisted by a man hauling on drag ropes in front. The weight carried on this contrivance in level country is surprising, and the narrowness of its track makes it peculiarly adapted for cramped and difficult paths. In very steep localities I doubt its efficacy; it is exceedingly difficult to balance, and to manage it properly requires a special education. Other types of wheel-barrows there are, but they can only be used economically in skilled hands, and the narrow-track, double-wheeled hand-cart, such as has been described above, is generally better.

Pack transport animals are the camel, mule, pony, bullock and donkey. In considering the classes of animals best adapted for pack work, we place the mule *facile princeps*, entitled to this distinction by his powers of endurance. The camel, it is true, consumes little

more food and carries more than twice the load of the mule, but he travels at half the speed, occupies more road space and generally dies in large numbers. If unfortunately conditions should be such as to necessitate the utilisation of pack animals on Lines of Communication, the camel will, in countries where it is indigenous, largely predominate in numbers and will in fact be the main standby. The mule is far too valuable to be relegated to Line of Communication work, and the demand for this animal with the troops in front will usually preclude the provision of any for work in rear. Ponies, except those of special breeds, are better adapted for draught than for pack employment; the ordinary riding or cart pony cannot long endure the strain of pack work, and experience shows that he quickly goes to pieces under it. Certain classes of hill ponies, used for centuries as pack transport, are, however, little if anything inferior to mules, but they are not forthcoming in any large numbers. Donkeys are hardy animals and well suited to carry loads; but unless of particularly strong build are not up to the weights carried by mules, neither can they cover the ground at the pace of the latter. Pack bullocks are strong and useful in this class of employment, but are very slow and ill-fitted to endure the hardships of work, including frequently scanty rations on the Lines of Communication.

INLAND WATER TRANSPORT.

Rivers, canals and lakes are all very useful auxiliaries to the transport service, when their general direction is such as to allow of their use to relieve roads and railways of part of their traffic. Steamers, barges and boats will be used on their waters, and will be exceptionally useful in the conveyance of bulky stores at a minimum of labour. Colonel Furse gives some interesting figures as to the tractive power of men as applied to barges on canals; it appears that two men can pull a load of from 80 to 100 tons at the rate of from 7 to 9 miles a day. It will be seen therefore what an enormous saving would result in animal and human labour from this form of transport. In civilised countries it is generally possible to obtain considerable help from waterways. The Prussians, during the Franco-German war, made great use of the Rhine and the Moselle, and many other rivers and canals within their own country. The French had an excellent system of waterways, but it does not appear that they made as good use of them as they might have done. Neither do the Russians in the present war appear up to date to have recognised the importance and utility of the great Siberian waterways they possess. Between Nishni Novgorod, Kharbin and Vladivostock the waterway is almost unbroken. There are, it has been stated, "hundreds of steamers and thousands of barges on the Kama, Obi and Yenisei rivers." Yet no adequate use of these facilities for the transportation of troops and stores appears as yet to have been made. It is neglect of opportunities like these that makes all the difference between success and failure.

Examples of the advantages of rivers as means of supply are afforded by the campaigns of Frederick the Great in Bohemia, Napoleon in Germany, Wellington in the Peninsula, and, to go as far back as the middle of the 18th century, Montcalm and Wolfe in Canada. In warfare in uncivilised countries, waterways have, in several campaigns, played very important parts. The French had no difficulties when operating against Dahomey in 1892-93, until they were obliged to leave the river; and the China war, both in 1860 and again in 1900, the Red River Expedition, the Nile Expedition (1884-85), and the New Zealand war of 1860-65, are all instructive instances of the use of inland water transport. For the three last-named expeditions it was necessary to have boats specially constructed at the time of the commencement of hostilities; in preparing transport arrangements for a big war in a country where waterways exist and are likely to be useful, steps will of course be considered and taken beforehand to make the requisite provision of such classes of boats as will be necessary.

SECOND ESSAY FOR THE BURMA DIVISION.

Mounted Infantry Tactics in Hilly and Densely Wooded Country such as is met with in Upper Burma and the Shan States.

BY LIEUT.-COL. H. D'U. KEARY, D.S.O., 91ST PUNJABIS.

For purposes of lucidity it will be best to divide this subject under certain headings, and I shall deal with the question as follows:—

- (1) Preamble.
- (2) Description of Burma, and the military characteristics of its people.
- (3) Previous experience of Mounted Infantry in Burma.
- (4) Tactics advocated, and this again may be divided into sub-heads.

Our text-book on "Bush Fighting, 1903," dismisses the subject of Mounted Infantry in densely wooded and hilly country in two short lines—to the effect

1. Preamble.

that Mounted Infantry may be used for patrolling and carrying despatches.

I will endeavour to show that Mounted Infantry have, however, been used in the past in a much fuller manner, and therefore advocate such use in the future. The idea of a Mounted Infantryman being nothing more than an Infantryman put upon a horse and taught to ride well enough to move from one place to another is now exploded, and though it required the teaching of the Boer war to impress this upon most, yet none who have a knowledge of the work done by Mounted Infantry in Burma during the years of the pacification from 1886—1891 will deny that this lesson had been learnt by some at least of those engaged in the guerilla warfare that was waged throughout that time.

It is necessary to enter into some description of the country as well as of the characteristics of the enemy and his methods of fighting, as it may be taken for granted that a densely wooded and tropical country will only be chosen as the theatre of warlike operations when at war with such countries, and our past experience in them will be the surest guide as to the conditions to be met with in others of a similar nature.

Description of the country.

Upper Burma may be divided into three distinct parts, viz:—

- (1) The dry zone.
- (2) The wet zone.
- (3) The mountainous tracts surrounding the country on the east, west and north.

The dry and wet zone both are contained in the valley of the Irrawaddy and are for the most part level but becoming more broken

and irregular as they trend upwards into the foot-hills that lead into the higher elevations. The dry zone is not very densely forested, such forest as there is being principally "Eng" carrying little undergrowth and is easily traversed. The remainder is either covered with thick scrub or is open and cultivated with villages scattered everywhere. This scrub is in places dense and difficult to get through and in places fairly penetrable both to horse and foot; it is usually some eight feet high and a footman would be unable to see above it. The crops are millet, maize, cotton, sesamum and beans, of which only the first is of any account from a military point of view, millet growing to a great height and very thick, a horseman would with difficulty force his way though it, could not see above it and would be quite helpless amongst it. The villages are situated in open spaces, are variable in size but are surrounded by stout hedges of prickly ber (wild plum, *Zizyphus jujuba*) or cactus, both impenetrable for a mounted man. Paddy is not found to any considerable extent except where artificial irrigation is procurable.

In the wet zone we get almost universal forest with much heavy undergrowth, the population is scarcer but villages of the same type are to be found in openings and artificial clearings. The country is in part level and in part hilly as it approaches the mountainous borderland. The forest is traversed by cart tracks and paths, but off them movement of mounted men will often be very difficult and at times impossible. But still over a great deal of it mounted men can work to a considerable extent. Surrounding Burma on the three sides we get a rugged mountainous country. On the east the Karen and Shan Hills, on the north the Kachin Hills, and on the west the Chin Hills. Of these only the Shan Hills can be said to be really suited to any extended use of Mounted Infantry, the slopes being easy and there being many large open plateaux eminently suitable for rapid and extensive movement of horsemen. In the Karen, Kachin and Chin Hills mounted men are hardly to be used except in quite the restricted manner defined in the text-book; though in exceptional cases there are instances in which they have done more.

The inhabitants of all this country do not from a military point of view differ so widely in their characteristics and methods of fighting as to require any separate description. Their weapons are for the most part antiquated, they lack organisation and cohesion, and will be found in small and independent bands rather than in regular armies. They have no artillery and except the leaders few are mounted, they fight a guerilla warfare, relying on ambuscades and surprises to defeat their enemy. Positions if held are generally protected by stockades or are taken up in the walled enclosures often found round pagodas. They rarely, if ever, move by night, and their principal characteristic may be said to consist in mobility, being unencumbered either by personal equipment or by general impedimenta.

The enforested nature of the country affords ready means of obstruction such as stockades, felled trees and bamboo entanglements, placed across roads and pathways, and the approaches to such obstructions are moreover further defended by sharpened bamboo stakes, called *panjes*, which are cunningly hidden in grass and other undergrowth and inflict very nasty wounds on either man or beast. The arms are rifles of various patterns, mostly muzzle-loaders, and a *dah* (a kind of short sword) of whatever type that is peculiar to the particular tribe.

The operations in connection with the pacification of Burma after its annexation of 1885 may be said to have seen the birth of Mounted Infantry as a recognised arm in the Indian Army. Previous to this only the most elementary and local attempts to train men as Mounted Infantry had been made, and the value of the arm was in no way realised.

However, owing to the vastness of the country to be worked over in Burma, the mobility and elusiveness of the foe as well as the paucity of Regular Cavalry, which moreover speedily became decimated by epidemic of *surra* and *kumree*, it was manifest that mounted men must be employed and also that they must be mounted in some less costly manner than on imported horses who could not stand the climate.*

In Burma was to be found in considerable quantities an excellent indigenous pony, small certainly in stature but hardy, clever, quiet, strong and very enduring, suitable in every way for the purpose required; men were also there in plenty amongst the numerous Infantry poured into the country; it was only a matter of organisation and equipment to bring into being a most effective force.

Ponies were purchased, equipment was obtained, and soon in every part of the country there were detachments of Mounted Infantry ready to commence their work. Elementary in their training at first it is true, but under the influence of war experience (the quickest and most effective school master) they soon began to justify their evolution and to make themselves felt as a power in the country. The contrast of their rapid movement with that of the hitherto slow moving Infantry, their power of striking at great distances, their surprises and offensive tactics, very soon began to tell upon the enemy, who had up to now had things very much their own way, at any rate in those parts where there had been no regular Cavalry. The small pony was found to be eminently handy and suitable, and men had soon settled down as fairly capable horsemen. The establishment of the Military Police with still more mounted detachments enabled the withdrawal of the Regular Cavalry, which by now were hardly tried to mount even a fraction of their men.

* NOTE.—The American Cavalry in Manila has had exactly the same experience, losing large numbers of horses from the same causes, which points to a presumption that in hot, moist, tropical countries, Cavalry is too expensive an arm to use.

From now the settlement of the country was, so far as mounted troops were concerned, entirely in the hands of these Mounted Infantry, who took the place and did to a very great extent the work of Regular Cavalry. Little of the country except the Kachin and Chin Hills was so bad as to prevent any work being done on the these handy, active ponies, and the moral effect of their rapidity even when restricted to roads and paths was very great and effective.

Arguing from the analogy of the past my opinion is that the tactics to be adopted in this and similar countries should assimilate as far as possible to those of Cavalry. We must have good riders and men possessing individuality and initiative, being in such a country frequently called upon to act on their own initiative and often unable to see or obtain orders from their Commanders.

Horsemastership moreover must be rigorously taught and insisted on, its importance in these countries being enhanced by the fact that they are incompatible with the employment of foreign horses, and it therefore behoves us all the more to husband our available supply of the indigenous breeds, a supply liable to be extremely limited, in many of such countries. I go beyond the meagre statement that Mounted Infantry tactics should assimilate to a great extent to those of Cavalry by stating that Mounted Infantry should be at times prepared actually to fight on horseback and should be given some supplementary arm to assist them to do so.

I have previously mentioned that the enemy's tactics are those of ambushade and surprise which lead to opposing troops frequently coming into close and even hand to hand collision, a Mounted Infantryman is under such circumstances practically helpless; the enemy will not wait for him to dismount, hand over his horse and prepare to use his rifle even if the ground should be open enough to do so. The only practical course is to rush in on your enemy, giving him no time to follow up such advantage his surprise may have afforded, nor time to escape, if so minded, to prepare fresh surprises further on. These occasions have occurred frequently before, and it has been my experience to see Mounted Infantry endeavouring to make an effective weapon out of the butt ends of their rifles wielded in one hand or to turn it into a lance by fixing the bayonet. When Mounted Military Police were established this disadvantage was recognised, and they were armed with a carbine, sword and lance either all three or with carbine and sword or carbine and lance. The swords, however, were too heavy and the lance is cumbersome for use off such very small ponies, more especially as time did not admit of much training in the use of these weapons before being called upon to use them in earnest. On many occasions I have seen the carbine used as a pistol, being fired at striking distances held out in one hand, and on the whole I saw more actual casualties in this way than any other. This brings me to the point at which I started, *viz.*, the provision of a supplementary arm which can be easily used on horseback without destroying the essential

idea of Mounted Infantry and which is effective for offence and defence as the exigencies of the moment demand, and I advocate that this arm should be a revolver or automatic pistol; either of these weapons answers our present purpose and is no encumbrance to the man either mounted or dismounted, nor will it tempt Mounted Infantry to depart from their proper rôle on unnecessary occasions as an "arme blanche" is apt to do. More opportunities can be found for training men with this weapon than an "arme blanche" without interrupting training in other essentials, and though the opponents of this arm urge that it will be as dangerous to friend as to foe in the mêlée, I still think that the scattered nature of such mêlée and the nature of the country where such would take place will be a check on promiscuous and dangerous firing. Some may advocate a sword rather than a pistol as being less dangerous; it may have advantages but has also many disadvantages, not the least of which is its liability to catch in all sorts of obstructions when moving in undergrowth, long grass, etc., and also on stumps and rocks owing to the lowness of the pony. The weapon must necessarily be always carried on the animal, and if adopted must be a light thrusting one and not the heavy cutting tulwar usually issued.

The only alternative to providing such supplementary arms as may be considered best is the one of not employing Mounted Infantry at all in country or in such situations as would render them liable to come into sudden collision with the enemy. This course I cannot imagine any one entertaining for a moment; our experience has shown what was achieved in Burma by the hastily raised and trained Mounted Infantry of 1886 and subsequent years; shall we not look therefore to even more brilliant results to be obtained from them now that we have to hand (or the knowledge to make) the magnificent Mounted Infantry left us at the close of the South African war?

Granted then our Mounted Infantry shall be used and giving him if possible a supplementary weapon to assist him in close combat, we may proceed to enquire how he may best be employed. It is said that the action of Mounted Infantry is for the most part defensive, in so far as actual fighting is concerned, and this in ordinary cases is true, as though the use of a horse gives the mounted man the advantage of the initiative and the power to appear suddenly where not expected and thrust himself suddenly into the enemy's sphere of control, still when he has achieved this he has to act on the defensive or retire as fast as he came. In forest and hilly countries fighting against an unmounted foe who never practise the mass tactics found amongst the savages of the Soudan, the Afghan Ghazis or the Zulus, but who trust to surprises, dispersal and rapid movement to disconcert their enemy, then I say, having no Cavalry you must use your Mounted Infantry offensively wherever possible. The moral effect of the offensive is always very great, and against a foe who has not the support afforded by cohesion it must be even greater.

Mounted Infantry may be most advantageously employed as—

- (a) Advanced Guards.
- (b) Flank Guards.
- (c) Rear Guards (but only occasionally).
- (d) Reconnoitring and scouting.
- (e) Threatening flanks.
- (f) Cutting off retreat.
- (g) Pursuit.
- (h) Raiding and surprises.

I shall discuss each in the order named.

(a).—As advance guards when with a combined force of Infantry and perhaps and probably mountain guns advancing through the country towards some definite objective or with some particular object, usually to the chief town or capital of some tribal chief; in such cases until this point is reached we may look for obstructive and delaying tactics on the part of the enemy which will consist of building stockades along such roads and paths as lead towards the capital and also in ambuscades in favourable positions. It must be the duty of the advance guard to discover and brush away the first and to render the second ineffectual. The advance of the main column should not be delayed except in extreme cases when the obstacles opposed to the advance are so strongly made and held as to be impossible for the advance troop to carry. It will not be possible often for an advance guard to spread out scouting over the country; the forest does not admit of such extension nor of any view if it did. Your advance guard must therefore move along such roads and paths as may be met with, and, keeping in view the fact that lateral communication is difficult or impossible, each detachment must be strong enough to make an effective defence in case of being isolated and attacked.

Advanced guards should work well ahead of the main column without fear, as an unenterprising enemy such as we are considering will hardly take the risk of intervening between the advance guard and the main body. A day or nearly a day's march may be safely attempted, if necessary, as it may be, to keep in touch with the enemy or keep him from building stockades and other obstructions. Your Mounted Infantry must be capable of bivouacking without return to main column, which is a waste of time and restricts action, and must therefore carry what is necessary with them, supplies being replenished when required. All due precaution would of course have to be observed, and in very dense parts the leading men and flankers would have to move on foot; from past experience it is noteworthy to remark that mounted men have been much more rarely ambuscaded than footmen for the reason that ambuscades to be effective must be at the closest quarters which leave little chance of escape from mounted men.

As to stockades, if met with they would of course be both reconnoitred and attacked on foot; they can never be of any great length, and can therefore be usually outflanked. When outflanked and the enemy driven out the best policy is to push on and pursue at once, giving the enemy no time to occupy other stockades

he may have constructed in the rear. Ambuscades may not then be feared; these would have been laid in front of the stockade, and any others arranged for, further behind, would be either unoccupied or their occupants demoralised by the retreat from the stockade and the pursuit by mounted men.

(b) *Flanking Guards*.—These would act similarly to the advanced guards as described above, but they would necessarily conform more closely to the movements of the main column, and will further have difficulties with regard to lateral communication, which difficulties must be overcome as circumstances of the moment suggest, but it may be taken as certain that whatever difficulties the mounted man may meet with they will be enormously greater for the footman.

(c) *As Rear Guards*.—There will be very few instances in which it will be necessary or advantageous to employ your Mounted Infantry on rear guards. On one or two occasions it has been the misfortune of our troops to have to retire before superior strength, and then opportunities may arise where Mounted Infantry may from their superior mobility keep an enemy at bay longer than Infantry as they can delay their retirement so very much longer and need fear less being outflanked in the jungle.

(d) *Scouting*.—Here indeed your Mounted Infantry must take the place of Regular Cavalry, and it is here too that they may be more often called upon to engage in mounted combat, as owing to the nature of their duties they will be liable to find themselves at close quarters before they are aware, that is, when in thickly wooded places. In thick forest, scouts would be sent to reconnoitre routes, rivers, passes through hills and especially to obtain information of villages and other positions believed to be held by the enemy. On these occasions scouting parties should be large enough to offer some degree of defence as each party will naturally be entirely cut off from any communication (signalling or other) with other parties and very small parties and single individuals may be liable to be cut off. To see without being seen is the principal duty of a scout, and in thick forest it will naturally be much harder to obtain necessary information than in more open country; ears will often be of more use than eyes, and the leading scouts should stop often and listen. In forest sounds travel long distances, especially those of wood-chopping and human voices. Wood-chopping must be done when stockades are being built, and natives of all sorts usually shout and talk loudly when on any combined work. Villages will usually be found situated in natural or artificial clearings, and care must be taken not to come out suddenly on to these openings. A thinner appearance of the forest ahead and frequent glimpses of the sky are sure signs of the proximity of a clearing. Similarly when climbing hills in forest, one may know as one approaches the top by the same sign, namely, glimpses of the sky through the trees. Of course showing over the sky line in forest is not so dangerous as in open country. Yet stockades are often placed right on the crest of a hill

and camps may be just over it, therefore precaution should always be taken. When scouting in light forest and scrub jungle, greater dispersal is permissible, and the group system will be found to be the best to adopt.

(e) & (f).—In conjunction with Infantry or Infantry and Mountain Artillery in attack on a position, Mounted Infantry may be usefully employed in working round and threatening or attacking a flank or to get completely behind and cut off the retreat. The nature of the position usually taken up in such a country affords great opportunities for such action; being a stockade situated on one or more isolated hills, a village or the walled enclosures surrounding some pagodas none of such positions will be extensive and will partake more of the nature of the fort than otherwise. Difficulties occur in arranging that such movements shall be correctly timed, no signalling communication can as a rule be kept up between the forces, nor will the Commander despatching the Mounted Infantry be often able accurately to judge the rate at which they could proceed. Distances may be accurately measured on maps, but many obstacles to a rapid march through forest may occur. Cart tracks and paths zigzag beyond conception, fallen trees or bamboo clumps are often most difficult obstacles, and a small ravine barely visible on the map may take horsemen a considerable time to find their way in and out of. Again it is not an easy thing for the flanking party to hit upon the position; they must make a wide detour and there are no signs to be recognised in a forest by which they know when to turn towards the objective.

However, given plenty of time and good leaders such coups may and often have been accomplished, and the sudden appearance of mounted men on a flank or rear will often cause an evacuation of a position that will cost many lives with only a frontal attack. Should your Mounted Infantry be successful in arriving at the right place at the right time their actions may vary according to the intentions of the Commander of the Forces. Probably, however, it will commence with dismounted and end with mounted action. It may be that he intends them to assist in the actual attack which would have to be carried out on foot. Or he may be sufficiently strong himself to carry the position and only requires the Mounted Infantry to be prepared to inflict punishment on the retreating enemy by fire on the flank. This, however, would be unfeasible in thick cover, but all paths and avenues of escape behind may be blocked and the enemy decimated. Mounted pursuit may follow this dismounted action if the ground permits.

(g).—I advocate mounted pursuit always when an enemy is moved from a position and as far and as fast as is possible. Even when the forest is thick the enemy must more or less follow tracks and pathways and some attempt must be made to drive him on and inflict some loss. Even if no actual loss is inflicted, the moral effect outweighs all the considerations; panic is more easily caused amongst undisciplined savages. A properly timed and well carried out

pursuit may shake them so that they will possibly never rally or stand again. I imagine many of us have at one time or another had to turn our backs on some infuriated wild beast, mad dog or other enemy, and if so will know that real fear and shaken nerves only then commence.

Therefore pursue when you can, using what weapons best come to hand to aid you.

(h) *Raiding*.—In all the previous cases we have considered the action of Mounted Infantry in conjunction with Infantry, and we now come to independent action of Mounted Infantry working alone.

The moral effect of rapid marches and surprise in unexpected places is very great and has in the past been proved to have a most paralysing effect upon the enemy. He never knows when or where he may be pounced upon and is therefore disheartened and nervous. Our previous experience in Burma has shown us the value of small detached bodies of Mounted Infantry scattered about the country, always on the move, ready to act on the offensive at all times, undertaking long and often difficult night marches to surprise the enemy in his village or camp at daybreak. The enemy keeps no outposts nor does he carry out patrols, so such surprises except for the physical difficulties of the country are easy. It is hardly necessary to insist here that neither mounted nor footmen can march through forest by night except on known paths and with faithful guides. Villages passed *en route* should be avoided, and such signs as the barking of dogs and crowing of cocks listened for to prevent blundering on such unawares. The point whence the final attack is to be made should be reached before daybreak to allow time for final arrangements. Such an attack will be carried out on foot, though part may remain mounted for outflanking or pursuing action. Care must be taken not to launch out these parties in insufficient strength; they will be isolated from all support and a quarter at least will be absorbed as horse holders.

Mounted Infantry may in the course of such tactics as I have put before you, on occasion, find that their best course out of a difficulty is to turn themselves for the nonce into Cavalry and charge *en masse*; shock tactics are of course quite outside the rôle of Mounted Infantry, but it may be a choice of evils; the boldness of the proceeding bids for success and an ill-disciplined foe will seldom wait for the onslaught; there is moreover the justification of previous success.

The questions of formations for the march or for any other of the duties discussed have been in no way touched upon, being more a matter of drill and training than of general tactics, the principles only of which I have put forward as suggested by actual experience.

INFANTRY SCOUTING.

A LECTURE.

BY MAJOR A. T. SPEARMAN, ROYAL WARWICKSHIRE REGT.

I.—ITS NECESSITY AND IMPORTANCE.

No one will deny a maxim accepted by the most highly trained armies down to the very savage that, in time of war, information concerning the enemy is of the very first importance. From of old we have read of its importance, and the necessity and difficulty of obtaining early and accurate information has been increased ten-fold by the introduction of modern fire-arms and smokeless powder. For a commander to advance to the attack against an enemy of whose dispositions he is ignorant is nothing less than criminal; for a commander to march about in an enemy's country unaccompanied by the best means of obtaining information, *i. e.*, scouts, is again criminal.

On the flanks of the firing line, and ahead of it until engaged outside the advance, rear and flank guards, scouts are essential. To be without them is to be unprovided with the best means in your power to ensure your protection. This applies to all commanders in the field, from the Commander-in-Chief down to the commander of the smallest unit.

Unfortunately the importance of this fact is not recognised to its full extent by us, and consequently "scouting," instead of being a branch of the most complete training that men receive, is practically neglected save in its very rudest elements (even though the men be specially selected).

Commanding officers find it difficult to spare "special" officers for the instruction of scouts. Scouting is treated as a subject that anyone can teach and anyone can learn. *Infantry Training*, S. 192, para 1, says: "The training of scouts will, as a rule, be carried out by a selected officer in each company," but practically this is only possible under the general assumption that scouting is to be put on the same footing as squad drill. To attach to scouting its proper value would be to raise it to the standard of a course which needs special instruction, and the above quoted paragraph in *Infantry Training* could only be complied with if we could assume that in every company there is an officer capable of at once teaching such a heterogeneous collection of subjects as the maxim gun signalling, telegraphy, and many other technical subjects requiring as a matter of fact a "special training."

The late Colonel Henderson in his work *Stonewall Jackson* says, on the subject of scouting, in one place, "History has hitherto overlooked the achievements of 'scouts,' whose names so seldom occur in official records, but whose daring was unsurpassed and whose Services were of Vast Importance."

What do we learn from the cunning that our enemies use against us? Fighting as we do all over the world exceptional opportunities are offered us both to learn and apply. Bad reconnaissance and bad scouting are proverbial amongst us. This is entirely due to the want of appreciation of its vital importance, and to a faulty method of instruction in this most important part of training. The errors in, or neglect of, training in peace has caused us and will again cause in time of war much trouble, and possibly may occasion the sacrifice of many valuable lives which might otherwise have been saved.

Our infantry is too inclined to leave the duty of scouting to be performed by the cavalry, labouring under the painful delusion that it will always have cavalry ahead to perform this duty. Can we use cavalry for this purpose in mountainous or very broken country; nay more, can we move in security despite the fact that our front may be covered by a cloud of horsemen? Even our very text-books tell us that much—No.

Why then do we fail to pay sufficient attention to our scouting? The answer, I think, is fairly simple—it is that we fail to appreciate scouting for the infantry man at its proper value.

Information that is required in modern warfare is of a most complete order; definite information as to the enemy's position, dispositions, strength, movements, etc., must be obtained, and it is for this purpose that the scout will have to be used, and if he be a trained man, how valuable the information to the commander, and if an untrained man what dependence can be put on the information?

Let us then remember that the day may come when the commander (of even the smallest unit) is, to use the naval term, "cut adrift." His security depends upon his vigilance, his vigilance is his "scouts." To turn in the hour of trouble and expect a man (untrained) to carry out a very difficult task is surely "flirting with luck," and he who would thus flirt runs a great risk of being jilted.

How would any of us like to be placed blindly in some very hazardous situation, without the means or the knowledge of combatting that situation? Is it then fair to subject an untrained man to this ordeal? Men have done it and men will do it again to-morrow, if called upon, but is it fair? In justice, *no*, ten times *no*; then let us realise the proper value of scouting and a foundation to work upon will have been laid.

It is not every man who can scout, and when you find a man who *can* scout, train him and exercise him in peace time, that when war comes you may have a valuable asset at hand in the place of raw, though good, material.

If it is deemed necessary to have "specially selected" men for scouts, why not let them have "special instructors" and "special instructions" based on some approved system. So long as we fail to grasp this most important situation, so long shall we continue to enter upon war at a very great disadvantage.

At present scouting, if considered at all, is considered an insignificant detail in training, but the day must soon come when scouts will be looked upon as adjuncts as important as signallers and the various other "specially" trained men. One of Napoleon's thoughts relative to the art of war was, "Nothing inspires more courage, and clears one's ideas more, than to *know* the position of the foe."

Let us remember then that we are ever beset by wars and rumours of wars, and *now* is the time. To be forewarned is to be forearmed.

II.—THE SELECTION OF THE SCOUT.

The only official text-book which makes any reference to scouting is *Frontier Warfare*, 1901, and even here the whole subject is dismissed in two short pages and a short overleaf, but that short overleaf contains two lines of the utmost importance, "Scouts are not to be employed at work other troops can do."

Before settling down to the question of the selection of the scout, we must consider first what are the duties of scouts.

Frontier Warfare, 1901, gives the duties of scouts as follows:—

1. *Ground Scouts*.—Use with their companies and battalion—

- (a) To show the best ground to advance over.
- (b) To point out obstacles.
- (c) In bad ground to find accessible routes.
- (d) To show where the best cover for advance can be obtained.

II.—*Reconnaissance*.—To act in the mountains the rôle of cavalry, in the plains, etc.

III.—*As a Separate Body*.—For special purposes—

- (a) To carry out coups de main.
- (b) To seize rapidly points of importance.
- (c) To keep down by day and by night the fire of the enemy's sharpshooters by means of their superior mobility.
- (d) To cover retirements from difficult positions.
- (e) To clear rapidly woods, cliffs, etc., of enemy's sharpshooters.
- (f) To act on ground considered too difficult for ordinary infantry.
- (g) For any special work requiring great activity and powers of observation and acuteness.

Infantry Training, 1902, in addition to the above lays down:—

(1) *In the Attack*.—To precede the advance, reconnoitring the ground, look out for ambushes and to watch the flanks.

(2) *In the Defence*.—To observe the enemy's approach, to report his strength and the direction of his march, to watch the flanks and observe the enemy's movements.

(3) *As Ground Scouts*.—The sub-heads here are practically those quoted in *Frontier Warfare*, 1901.

(4) *Reconnaissance*.—To act as the eyes and ears of the army, especially in mountainous and wooded country, to obtain information of the enemy's position and strength, the whereabouts of his guns, the nature of his entrenchments, etc.

(5) *In Night Operations*.—To precede the advance.

(6) *Special Purposes*.—The sub-heads here are practically these quoted in *Frontier Warfare*, 1901.

To carry out the above rôles it is evident that the scout must be a man who possess exceptional capabilities, both mental and physical, which have to be further developed. It is also clear that to find the number of men laid down in *Infantry Training*, 1902, "at least two men per squad and two N.-C. O.'s per company (making a total of 18 men from one company) is no easy matter."

No one, I think, will gainsay the fact that the British soldier has much to learn in the way of scouting. This may, I think, be attributed to the fact that the classes from which we draw our recruits at home are not in any way brought into contact with the life that has to be led in many instances by the colonist and almost invariably by the semi-civilised or barbarous races. The recruit has not been dependent on his scouting and shooting capabilities to obtain his food, and moreover has not to live with every man's hand against him, and consequently permanently on the *qui vive* for some one who may be essaying to trap him. This latter class of men from childhood upwards imbibe the art of scouting as a matter of food and self-preservation, and at a very early age become experts at the art. Our men remain untaught and have not ingrained in them the instincts so essentially necessary for any one who wishes to become a master of the art of scouting.

It is only possible to train very few up to the standard of native cunning, but we *can* train them all to compete with, and in this art defeat any European enemy that we might be brought into contact with. In doing this we are at least helping them to compete with our more common enemy of the semi-civilised and barbarous races.

With a view, therefore, to simplify matters for the company commander in his selection of the man who is to be trained as a scout, I would suggest that the following points should be taken into consideration.

The scout should possess the following qualifications and some of them to a marked degree :—

(a) *Be thoroughly athletic*.—A cross-country runner is the sort of man that is required, not a weight lifter or strong man. His powers of endurance in the field should be most carefully tested. The men who usually keep hard and fit are well known to the company commander. Scouts have a great deal more to go through in the way of endurance than the remainder who go out to give battle. Under the heading might be included some of the other physical capabilities which are essential. The scout must naturally have very good eyesight and not be subject to any recurring diseases which may render him unfit for the hard work he will

have to perform. A "canteenwallah" is not of much value as a scout.

(b) *Intelligence.*—This should include educational capability. If the man selected is smart, sharp, can read and write, can grasp an order or a situation fairly rapidly, he can be taught all that will be required of a scout under this heading. His power of discrimination should be good. He must be a man of common sense. No obstacle should deter him from pushing on and carrying out the task allotted to him at whatever risk. He must be able to deduce reasons for any movement that the enemy may make. He must not guess, he must be able to make certain; any one can guess, and we know the value of 99 guesses in 100. He must have a knowledge of the military art in order to draw sound conclusions.

(7) *Be a Good Shot.*—Though a scout is essentially a man for obtaining information and not for fighting, he must be able to use his weapon with certain effect should the occasion arise, such as in the protection of his own life or perhaps that of a comrade scout who may be in some difficulty. This heading, however, will be found more fully gone into under "The Training of the Scout."

(8) *Willingness.*—A scout must be a man who is willing to turn his hand to anything. He must have a natural inclination for the art. It is not the very least use to try and train a man as a scout who does not want to learn. If he is an unwilling learner you are wasting your time in trying to instruct him. One volunteer is worth twenty pressed men. There are men in every company who are fond of adventure and who would consequently take to scouting with a will.

A man carefully chosen with a due consideration of the above headings should produce a man who can be taught the art and would be a credit to his regiment.

Human nature is human nature all the world over, and so when you ask a man to become a scout he will want to know what his *quid pro quo* is going to be. You cannot get a man to work at and take an interest in anything which will entail a great deal of risk and extra work, with considerable wear and tear to his clothes and boots, etc., which has to be made good out of his own pocket, and for him to get nothing in return.

First and foremost he should be better paid. Scouts should as a privilege be left off all guards, piquets, fatigues, etc. In place of these his attention must be constantly devoted to his scouting. Daily he must practise his semaphore, transmission of information verbally and by written messages, and he should take his eight or ten miles a day of exercise in conjunction with his work. The status of the scout then becomes established, and scouts are looked up to by their comrades as picked men, and they really should be the picked men of the regiment.

Special badges denoting their special *métier* might be given them, and there are in addition many other little privileges which commanding officers might grant them. One, a small one perhaps

from our point of view, but one which I know would count much with them, is to be known and addressed as "Scout Robinson" in place of "Private Robinson," and surely this is a small concession.

In the selection of your man to be trained as a scout perhaps the most important thing is that you know the man personally. Thus you are in a position to combine the requirements laid down to guide the selection, and are not bound by records such as educational certificates, musketry qualifications, etc., which might all be of the first order and yet the man may not be fitted for the work of a scout.

III.—ORGANISATION AND EQUIPMENT OF INFANTRY SCOUTS.

Having selected the individual whom you wish to instruct in scouting, it is perhaps as well before discussing the subject of training to consider first the organisation and equipment necessary.

The number of scouts per company that should be trained in accordance with *Infantry Training*, 1902, is, as has already been pointed out, hardly practicable.

The point now arises, should scouts be trained to work in pairs or in groups of four? The question of working them in other numbers may, I think, be left out of consideration.

In my opinion the organisation which is best is the "group" system.

I shall therefore proceed to discuss the "group" system, with but a few remarks in dismissal of any serious consideration of the organisation of scouts in pairs. The great, and to my mind conclusive, objection to the "pair" system is that in the transmission of information, otherwise than by signal or semaphore, one man of the pair must be detached. The remaining scout is, therefore, left unsupported, probably in close contact with the enemy. It may become necessary for him to change his position, nay, he may be forced to do so, and is perhaps unable to communicate with his fellow scout. Another factor of great importance, which must be considered when men are working under conditions requiring considerable nerve and self-confidence, is that better work is obtainable when the scout knows that there is a friend at hand in case of need.

No doubt there are occasions when scouts, used in pairs or even singly, are best, but from the point of view of their general employment, I think the "group" system is the system *par excellence*, for if it becomes necessary to use a pair of scouts or a single scout, these can always be taken from some group. If you train scouts in pairs, however, it does not follow that two pairs will make an efficient and workable group.

If we can thoroughly train two groups per company and place them under a "group commander" (thus having nine trained men a company) it is fair to assume that any task that the company may be called upon to perform can be carried out. The "group commander" should preferably, though not necessarily, be an N.C.O.

Each "group" again is commanded by a "group leader," who may or may not be an N.-C. O.

Once the company commander has made the selection of his nine men, the selection of the members of each "group" and the selection of the "group leader" (in the event of his not being an N.-C.O.) should be a matter of co-option, thus ensuring perfect harmony.

Each battalion will then have 72 scouts, roughly $\frac{1}{12}$ of the war strength of a British battalion in India, and this should meet all requirements, whether a company or battalion is considered the unit in question.

The "group" system being accepted we can proceed to the analysis of its component members. The group is sub-divided into "group leader" No. 1, No. 2, and No. 3.

"No. 1" is the advanced scout, "No. 2" remains with the "group leader" in the scouting group, and "No. 3" acts as messenger. Their duties will be gone into under the heading of "The Training of the Scout."

The system of numbering each man of a "group" enables the individual bearing the number to appreciate at once the duties belonging to that number. Thus, for example, when a scout is told off as "No. 1" he at once understands that he is the advanced scout, and knows the duties he has to perform.

Intervals and distances at which groups can work depend naturally on the country being worked over. In open country about a quarter of a mile between "groups" has proved quite satisfactory. In the "group" the most advanced scout is "No. 1." About 200 yards in rear (in open country) come the "group leader" with "No. 2," and then 400 yards in rear comes the "Transmitting station." The station is composed of "No. 3" from every "group" in the field, *i. e.*, advanced and support groups together with the officer or N.-C. O. who may be conducting the scout. All information is sifted here and what may be considered necessary is passed to the rear.

When the whole of the "groups" are not being used for scouting, such remaining "groups" are formed up together about a quarter of a mile in rear of the "Transmitting station," and are called "Support Scouts."

By this system, should a company move out, its front is at once covered by its two "groups;" the Transmitting station in this instance being composed of the group commander and the two "No. 3's." Similarly the front of a battalion may be covered by as many "groups" as may be considered necessary.

Now the question crops up, who should direct the movement of the scouts when acting on so large a front as might, and probably would, be necessary when a battalion is considered the unit?

It may be taken for granted that a commanding officer would not feel justified in accepting information which had been sifted by an N.-C. O., however reliable he may be. We may assume, therefore, that the commanding officer would detail a "special" officer for

this purpose. In considering the organisation of scouts, therefore, we may take it for granted that a "scout" officer is essential, whose duties in peace time would be the training of the whole of the scouts, thus ensuring uniformity.

A "special officer," moreover, would be able to sift the information better inasmuch as he would know the value of each scout personally, and the exact degree of dependence to be placed on his particular information, and in addition better work is always obtainable from men when working under an officer.

Company commanders are already dealing, as experts, in such a motley collection of subjects that they could hardly be blamed for not apportioning sufficient time to the instruction of their men in an art demanding such constant attention, as will be shown in "The Training of the Scout." The result is that scouting would continue to be taught in the present perfunctory and sketchy manner, leaving the production of the *real* article to be completed on service.

With the question of equipment is bound up that of finance.

The kit that has been found most convenient is as follows:—

A pair of *very* baggy knicker-bockers leading down to just above the knee, with the puttee bound on the bare leg. A pair of rope sole boots is essential for night work. Rope soles may be bought from some prison and be attached to an old pair of boots.

Each "group" should have at least one pair of field glasses, a watch and a compass. If the number of these could be increased so much the better. Each scout must be provided with a serviceable note book. The one I would recommend is that with a strong cover, which will allow of the introduction of a refill when empty. The page to be torn out should either be perforated for the purpose, or else the refill should be made like an ordinary scribbling block. Another essential is two small flags, these flags being six inches square, one white and the other red. The red flag has a small white square let into its centre, and *vice versa* with the white. The white flag denotes your own side, the red the enemy, and when both flags are used together it is a scout signal. Thus the white flag held above the head indicates your own side has halted. Any of the signals laid down can be used. The size settled upon was one that would just and no more be visible at about $\frac{1}{4}$ mile when scouts were semaphoring to one another, for which purpose also they use these flags. An automatic check is thus produced to prevent inordinate extension. This will, however, be referred to again under "Training."

The provision of the equipment depends mainly on the generosity of the commanding officer, and the upkeep partly on his willingness to make a monthly grant out of some regimental fund and partly to the *esprit de corps* of company commanders who realise the absolute necessity of scouts.

You can train a man as much as you like in accordance with *Infantry Training*, 1902, but what use is he without a pair of field glasses, a compass, a note book, a pair of noiseless boots, not to

mention many other details, which for the time being let us call luxuries.

IV (i).—THE TRAINING OF THE SCOUT.

"Theoretical."

In the training of the scout we arrive at the kernel of this great problem. Scouting is an art which must be developed, and is not something that can be inculcated or made to grow from no seed. No power on earth can make a good scout where the germs are non-existent, but a certain amount of trouble and patience will bring out the dormant qualities.

If the selection of the scout has been correctly made the easier will be the task of instruction. It must, however, be borne in mind that there are right ways and wrong ways of imparting instruction, and perhaps it would not be amiss if a few remarks were made on the subject. The essence of correct instruction is to begin at the very beginning and to proceed very slowly. Pass over nothing until the lesson in hand has been thoroughly and finally mastered. In instructing those who have not had the same opportunities of education that we ourselves have had, is it not often the case that lectures are given and instruction imparted right over the heads of those whom it is desired to instruct? Words that cannot be understood, long sentences strung together and hurriedly uttered, meaning practically nothing as far as the men are concerned, and what is the result of all this? Shuffling of feet, indiscriminate coughing, and in the end the inevitable yawn.

A great point to remember is that in order to instruct you must speak distinctly, you must speak slowly, you must use phraseology which your audience can understand. These constitute the first steps towards what it is desired ultimately to obtain, namely, the *Power of Imparting Knowledge*. There are many who have the knowledge themselves but few the power of imparting it, and this is due chiefly, I think, to a want of appreciation of how to tackle the matter. The instructor must for the time being lower himself to the level of the mental capabilities of his audience; if this is not done, then the power of imparting knowledge to that particular audience ceases to exist.

Instruction in scouting must naturally be both practical and theoretical, the instruction in both being carried out simultaneously. It is surely wrong to hammer along on one particular sub-head of instruction till the men get what is generally known as "fed up."

An hour at this sub-head "theoretical," a couple of hours at another sub-head, possibly "practical," and to finish the morning perhaps another half hour on a third sub-head "theoretical" makes the time pass much more quickly and with far better results than the whole morning spent in treating at some one particular sub-head till it gets stale. This, of course, only applies to the earlier stages of instruction, and more especially to the theoretical portion of it, and

is not meant to refer to the subsequent instruction where scouts may spend a whole day and more at one particular scheme.

Not long ago I had about 70 scouts (who were still undergoing their course of training) working incessantly for 33 hours on end trying to locate an enemy's position with his dispositions without showing the very least relaxation of interest, in fact if anything the interest increased with the keenness and determination to accomplish that for which they had been sent out.

I will now treat of two parts of the training: (1) Theoretical; (2) Practical; leaving it to the discretion of the Instructor to choose which portion of the theoretical he will take to intermingle with the practical, while instructing in the earlier stages, as has been recommended above.

To begin with, it is necessary to point out in a lecture the *raison d'être* of scouts, what a scout is, what a man is undertaking, what is expected of him, in fact the why and wherefore of his rôle. The training and instruction should be conducted on such lines as will arouse interest and make the man reason and think out everything. Help him by asking him some easy question, which will lead to another, and at last daylight will dawn, and then he will grasp at knowledge and learn with avidity. If we attach such importance to the individual training of a soldier, how much more important is it to train the individual scout?

Scouts cannot be trained as a body. Each man must be individually trained and helped over his weak points, hence the labour and time involved in instruction. Above all individuality must be fostered, the very greatest care being taken to avoid the curbing of this all important gift.

Great pains should be taken during the theoretical instruction to instil into the scout that he is not a fighting man, but essentially one to obtain and transmit information. I have found this no easy matter, curious as it may appear. I once took some scouts out for a field day—these men I had been training for about a month before. I launched them forth on their mission and then rode to the enemy's side that I might observe how they would scout up to his position. They crept up very well to within about 300 yards (the country was a good deal enclosed), and then suddenly to my horror they quite needlessly engaged the enemy's patrols and outposts and a small battle raged. They had forgotten, in the excitement of the moment, one of their earliest lessons and one which it will often be found necessary to repeat.

In the initial stages of instruction as good a way as any to bring before the scouts what is expected of them, and to show them the class of work they are going to undertake, is to read to them the exploits of Colquhoun, Grant and other officers in the Peninsular War, of the results of the extraordinary daring of men like Stuart, Ashby and Mosby in the war between the North and South. Fennimore Cooper's Red Indian stories, redundant with stratagems and exploits, will also give instruction, and in the most pleasurable form.

I would suggest that scouts should be thoroughly grounded in the following sub-heads theoretically during their course of instruction:—

MAP-READING, CONVENTIONAL SIGNS, COMPASS.

It is absolutely essential that every scout should be able to read a map, and the best way to commence this instruction is by lectures in the open air, where the topographical features can be pointed out and explained. This knowledge is of the utmost importance, not only that the scout may be a free agent, but to show him the most likely routes by which the enemy will probably advance. It permits him to study at a distance how he would tackle any particular problem that might be given him to carry out. Hand in hand with map-reading comes instruction in the use of the compass.

Having thoroughly mastered the map and compass, the next stage would be instruction in the production of a sketch of the country together with a report. I need hardly here enter into the elementary principles such as are imparted to N.-C. O.'s classes in regiments.

Men, if not delicately handled (at this stage), are inclined to become disheartened in this portion of their training and the very roughest of work at first should be accepted. This portion of the instruction will be found to take the longest time and will entail the greatest labour, but it will pay the instructor if, after a year, he is able to produce scouts who can execute fair sketches and write intelligible reports.

It is hardly possible here to point out what headings are necessary in the various reports. Suffice it to say that, for the men, everything should be reduced to the very simplest form and there should be no quibbling as to the accuracy of figures, etc. Rough rules of thumb can be given as to the rate water flows, the amount of hay there is in a rick, etc., all of which, when used with the word "about," are of the utmost importance.

It is also essential that scouts should be taught to observe and remember a piece of country, a position or whatever it might be, and then later on to be able to put it on paper from memory. There may be many occasions when all that a scout can do is to get up close to an enemy's position, observe it and then crawl away. The information that the scout has thus obtained to be of value, we will say to a commander, 15 or 20 miles to his rear, must be committed to paper. This needs a deal of practice, but again it is not the impossible that the scout is being asked to learn.

In conjunction with sketching, of course, comes *Judging Distance*. I need not here elaborate on this heading, every regiment having its own system and method of instruction, but this much I will say that scouts should daily judge a distance or two, that it may become a matter of habit with them. Guessing should be ruthlessly checked. The scout must be given some data

to work upon, some method of computing. The man who guesses cannot by any shadow of a chance improve; he is merely beating the air.

Theoretical instruction will, of course, be supplemented by lectures on such subjects as *Caution*, pointing out that the foolhardy man will probably be shot, whereas a scout *must* get back with his information. *Self Reliance*: a scout must realise that his duty is to get information, which, perhaps, can only be obtained at the risk of his life; he should therefore be ready at all times to take his life in his hands and enter perilous situations, without any prospect of extricating himself other than by his own resources.

Further, there will be lectures on how the men may make the best use of their eyes in noticing objects and signs from which the presence or otherwise of an enemy may be deduced. It is a useful thing to train men to study carefully a certain area of ground, keeping the vision of it in their minds, so that when they next glance at it any change, such as the movement of some object or an addition to the view, may be instantly noted. When studying the ground with a view to locating the enemy scouts should be taught to imagine themselves in the enemy's shoes. Finally, the theoretical instruction must thoroughly imbue the scout with the idea that there is no known force which is to stop him from carrying out that for which he was sent forth. Peace is the time to train, so that when the dogs of war are let loose, both mentally and physically, scouts can and will overcome any emergency.

A cool head, a stout heart, a pair of strong legs will go nearer than anything to getting the scout up to an important position or out of a difficult hole.

IV (ii).—"THE PRACTICAL TRAINING OF SCOUTS."

In the practical training of scouts the first thing to be considered is the rapid transmission of information, when obtained either laterally along the line of scouts or from front to rear.

There are four methods of transmitting information, *viz.*, by semaphore, by written messages, by the passing of verbal messages, and finally by signalling with flag, helio or lamp. The last may be left in the hands of experts though it is advisable that there should be at least eight trained signallers with the scouts if possible, and these signallers should be trained as scouts.

I think, therefore, that before the men start scouting, they should become thoroughly efficient in the first three ways of transmitting information.

Every scout must be really thoroughly good at semaphore; average semaphore is not good enough. It is, therefore, advisable as a preliminary measure to hand over the whole party of scouts who are to undergo training, to the signalling officer, and let them be put through a course of about three weeks' duration. They are

then grounded with the best expert training, and subsequent practice should ensure the rest.

After they have been passed by the signalling officer as sufficiently proficient to be handed over to the scout officer they should continue to practice, using scout flags. These flags, as has been pointed out, are of such a size as to be just readable at about a quarter of a mile, so that the men soon learn to judge the distances that they would normally be apart from one another in open country.

All common abbreviations should be taught that might be useful for scouts only, *e.g.*, S.T.S., for scouts, in addition to the abbreviations normally used by signallers, and which they will have learnt in their preliminary course of semaphore.

For written messages, in order to have uniformity, it is best to have a standard or pattern form. The one I have adopted is to have "from" and "to" on top left-hand corner of message form; "place," "date" and "time" in top right-hand corner. How sent, *i. e.*, "by messenger," "by semaphore" in bottom left-hand corner; signature and rank in bottom right-hand corner; the body which contains the information being kept strictly intact from any of the other writing the message may contain.

In written messages scouts must be shown what information to give, what information to leave out. They must be taught that a message should be as short and concise as is consistent with accuracy. They must learn the uselessness of such information as "the enemy are 1,000 yards to our front," neglecting to state whether enemy is composed of Infantry, Artillery or Cavalry. They should be instructed to print the names of towns, rivers, etc., together with the reason for the necessity of so doing. It will be a considerable time before every scout will be able to write a message properly, and perfection can only be arrived at by careful individual instruction.

In verbal messages, as every one knows, the very simplest forms become so distorted as to be unrecognisable from the original, even when only passed down a comparatively short distance. Men imagine that little words make no difference; for instance, a message is being passed from the left of the line to the right and starts as follows:

"A patrol of enemy's cavalry is 300 yards on our left." A short way down the line some man very likely leaves out the words a "patrol of;" thinking "Cavalry" is sufficient; a little later on "300 yards" is left out, so that the message possibly reaches its destination as "enemy's cavalry is on our left." How different from the original!

In the initial stages of this part of their instruction the men may be extended in a long line at about ten paces. Now pass the simplest of messages along this line pointing out the necessity of repeating the message *exactly* word for word as it has been received.

A little later on groups may be extended to 400 yards interval and messages may be sent from one flank to another.

If, however, the message is of an intricate nature or of exceptional importance, it should be carried straight through to its destination wherever that may be by the man to whom it has been imparted.

We may now consider that scouts are efficient in transmitting information by semaphore, by written and verbal messages. It is necessary to instruct scouts how to move by signals and to carry out in close order, under the scout officer, movements that will have to be carried out in the field in extended formation. From this we pass on to the instruction of the various members of the group in their duties. Perhaps it would be as well, at this juncture, to go somewhat fully into these duties.

The "group commander" supervises the working of the two groups of his company, but he should be careful to interfere as little as possible with the duties of "group leaders." In the event of a company working in the field by itself, the "group commander" would take the place of the scout officer, *i.e.*, together with the two "No. 3's" form the transmitting station.

The "group leader's" duty is generally to supervise the working of his group and to carry out the duties of No. 2, if the latter is not with the group at the moment. He is responsible that the distance and intervals laid down by the scout officer are preserved.

"No. 1" is the advanced scout and moves at about 200 yards (in open country) in front of his group. His duties are to act as a ground scout, to show his group the best ground to work over. He will examine any suspicious place and guard the group against surprise. If he considers it is unsafe to advance any further until the ground has been thoroughly examined, he will halt his group and advance alone to satisfy himself as to the safety of advancing or otherwise.

"No. 2" remains with the group leader in the group. His duties are to keep communication with the transmitting station, and be on the lookout for signals all round. Should the group leader consider "No. 1" has not examined some particular spot which he considers necessary or should there be some locality rather beyond the bounds of "No. 1," he will detach "No. 2" from the group to perform this duty, on completion of which he should rejoin his group. When the group halts "No. 2" will lie down facing the rear. Should the duties of "No. 1" be very arduous, he may be relieved by "No. 2" If "No. 2" sees his "No. 3" doubling up from the transmitting station, he will fall out and await the arrival of the "transmitting station," and joining them will become a "No. 3."

"No. 3" is the messenger. It is his duty to watch the group to which he belongs, and receive or communicate any message for his group. Should "No. 2" come back with a verbal or written message, "No. 3" will at once report to the scout officer that his "No. 2" is coming in and will then double up to his group, becoming "No. 2." Any orders that the scout officer wishes to communicate to any particular group or any information that may be

received from that same group is carried out through the "No. 3" of that group.

When all the above duties of the members of groups have been thoroughly learned, and when every scout is interchangeable as "No. 1," "No. 2," or "No. 3" work in the field in close order can be commenced. Always commence by moving the groups in open country, where every one can be seen and any faults at once corrected, before attempting to work in broken country.

When the scout officer has satisfied himself by his own personal direction that the groups thoroughly understand movements by signal and the various duties of the component members, the group commanders may take command of their groups and move them about in the same manner, eventually giving over the command to group leaders, in order that each commander may become efficient in his duties, and that they may each know their own little command is efficient.

The various commanders in the field must remember that there must be as little noise as possible, no more whistling or shouting than is absolutely necessary, and that not louder than to be heard by the person whose attention it is attended to attract. It must be most clearly impressed upon scouts that they *must* work silently. Men are very apt to correct each other's mistakes, entailing the shouting from one group to another. One group will hail another telling them they are not keeping their proper interval when this has nothing to with them, but is the duty of the group leader of the erring group. Such interruptions cause endless delay and confusion in the passing of messages, etc., and must be checked from the commencement. If group leaders realise from the start that the men must work silently and all undue shouting and talking are stopped, groups will get into the habit of moving and working without noise and, consequently, when night operations commence, there will be no necessity perpetually to caution groups to keep quiet.

When it is considered that the scouts have mastered the whole of the training up to this point, they may be taken into the field and commence elementary scouting. In sending out scouts the officer in charge of them decides how many groups may be necessary to cover the ground, and he works this out on the scale that the groups should keep a certain distance apart, so it must be impressed upon group leaders that they must maintain the intervals indicated to them, if the ground is to be properly scouted.

The groups in the scouting line must be careful to maintain touch with the transmitting station. In order that groups may "start fair" in their extension, it is advisable until they become thoroughly efficient to make them take up their positions as follows. The scheme having been explained, the groups that are to form the scouting line should be formed up in front, be given the direction in which the advance is to take place, and a directing group should be told off. A tree, bush or some distant object should now be

pointed out as marking the line on which the extension is to take place, this line being parallel to the line of advance. As each group gets its proper interval, it will lie down, having immediately on arrival at the correct spot sent out "No. 1" to the front, who will also lie down. This will continue until the extreme group has reached its allotted place. When the extreme group is ready to move it will semaphore down the line that it is in position, which will be communicated to the scout officer. I may here mention that when scouts are extending or closing, I always make them double a hundred yards and walk a hundred yards, thus the ground is very rapidly covered, and without causing any undue strain.

The scout officer, on receiving information that the extreme group is ready to move, will signal "Scouts, advance." This is the general signal that scouting is to commence and each group rises and advances. The scouting line does not conform to the movements of the transmitting station, that is to say, the transmitting station may increase or decrease the distance between itself and scouting line or may even halt. The scouting line should pay no attention to this, for if it is intended that the scouting line should halt for some reason, then the "Scouts, halt" will be signalled. Men are so accustomed from working on advance guards, etc., to halt when somebody in front or behind halts, that at first it is rather hard to make them understand that they only come to a halt owing to a check in their front or *as the result of a signal from the rear*. The "transmitting station" normally in open country would follow in the centre and about 400 yards in the rear of the scouting line. It will soon be found that, however open the country may be, and however clearly groups may be visible to one another at the start, touch will constantly be lost through the failure to keep proper intervals. Scouting proper should not be commenced until distances and intervals are thoroughly understood and properly kept, both in the open and in close country. When scouts are "trained" it is not of much consequence if groups lose touch every two or three minutes or so, as long as their whereabouts are roughly known.

Groups, when launched forth for scouting, should forthwith commence sending information about the ground, presence or otherwise of the enemy, etc. They cannot start too early in forwarding any information. During the training stage it is a good plan to arrange that every group in the scouting line shall send back to the scout officer, during the morning's work at least, three verbal and three written messages and as much semaphore as possible.

The working of a group is practically entirely dependent upon the group leader, whether good work is to be obtained from his group or not. It has been pointed out that group leaders (unless they be N. C. O's) should be chosen by co-option and, therefore, very careful personal instruction should be imparted to them, to ensure that they clearly understand orders, duties, etc., so that they shall be able to instruct their groups in what they

themselves have learnt and, in addition, they must be able to enforce obedience.

It will be found very hard, when actual scouting has commenced, to see that each separate individual is carrying out his various duties. It is impossible for the scout officer to superintend everything when a large number of groups is working in the scouting line, but the work and responsibility will be lightened to an enormous extent, if he has taken special trouble to ensure the most thorough training to render group leaders efficient.

It is always advisable, as it lends zest to the morning's work and prevents *ennui*, to have a certain number of men in a position as an enemy, when scouting up to it. The men soon become bored, if they know that there is no enemy and therefore no real necessity to scouting.

Further instructions may now be given them as to how best to take cover. They must be shown how a fold in the ground may give cover and how by keeping still as often as not they will be invisible to the enemy though they may be lying out in the open.

A very practical way of testing the ability of scouts in taking cover is for the scout officer to go to the top of a hill with a helio and then make the men scout up to him, taking every advantage of cover. Whenever a scout shows himself, then the helio is flashed on him, he at once realises that he has exposed himself, and can correct his fault by taking up yet another position.

Scouts should also be trained in picking up ranges rapidly and may practise by shooting at bottles on the hill-side placed at unknown distances. Although a scout should never open fire except when absolutely forced to do so, this portion of his training should on no account be neglected.

It is useful to train men to recognise at a distance the various arms of the service and be able to estimate their numbers. They should be able to cull information from such things as lamp fires, kites, clouds of dust, etc. Horse and cattle hoof prints, wheel traffic marks, etc., should convey definite information. There are, of course, many more details of instructions, but the above contains the most important and at least a basis on which to commence; the ingenuity of the instructor must accomplish the remainder.

Practical training may at times become rather difficult owing to the climate, the difficulty of fitting in the men's meals, etc. It is very easy to go out for the whole day or even for longer periods in localities where wood and water are abundant, and where climate permits, but there are places where wood and water may be scarce, if existent, and these two essentials would then have to be carried by the scouts themselves, thus greatly impeding their progress.

Practical training too becomes somewhat valueless when the same area of ground is covered week after week. At best one can only divide the surrounding country into six parts, working one section a day, and, moreover, it is hardly possible to move more than

seven or eight miles away from quarters as there is always the return journey to be considered.

There would, however, be no difficulty if scouts could obtain permission to go away, for a week or so at a time, into new country, thus practising on new ground and working with a fresh mind. The mere fact of being able to work out to a new area by one route and work back by another enhances the value of the lessons to be learned.

It is hard, in a short article, to go into the training of the scout thoroughly. This is more a matter of a treatise. Only the broadest outlines on some of the most vital principles have been laid down, but sufficient material for thought, I hope, may have been here propounded. The keen instructor can read between the lines and see much room for amplification and improvement.

Apply modern conditions to Napoleon's maxim "Read and re-read the campaigns of Alexander, Hannibal, Cæsar, Gustavus Adolphus, Turenne, Eugene and Fredrick; take them for your model, that is the only way of becoming a great Captain, to obtain the secrets of the art of war, and it will be found there is much to be learnt."

Finally, the training of a scout should be such as to fit him for any emergency, to perform any duty, to carry out any enterprise. It should render him always fit and prepared to execute anything under Heaven. What better motto for a scout than "Ready, aye, ready."

V.—THE ACTION OF THE SCOUT.

The scout having been thoroughly trained both in the theoretical and practical portion of his work, may now be employed in the field, and it is intended here to discuss the "Action of the scout."

Before the scout is sent out on any particular duty it should be thoroughly explained to him exactly what is required. It is best always to give verbal instructions, and there should be no difficulty in the case of a trained man. Written instructions may fall into the hands of the enemy in the event of the scout being captured or shot, thus rendering any subsequent attempt at obtaining this information very difficult, if not null and void.

All instructions should be most explicit. There must be no doubt as to what is meant, and to ensure the scout understands exactly what is expected of him, make him repeat, preferably some time after the instructions have been issued, what his orders are. It should be possible to trust him with even confidential information; any information concerning movements or intentions of the enemy, when known, will greatly assist the scout in the fulfilling of his mission. Once launched on his mission it is the duty of the scout ever to be on the *qui vive*, remembering that once his enemy sees him, not only is his mission much more difficult to accomplish, but it may be entirely frustrated. It may take hours, even days, to carry out his task.

There may be open ground to cross, and any ill-timed movement may lead to his detection. Having once located his quarry he may find it more convenient to move round on one of the flanks than to pierce the front. Roads, frequented paths or inhabited places should be avoided, if it is desired to preserve secrecy. The closer the country, the greater the chance of success, but at the same time much training and practice is necessary to work in country of this nature. Scouts *must* be able to do this. It is part of their rôle.

High ground from which observations of the surrounding country can be made should always be ascended when possible to enable the scout to cross it at greater speed, but it must be borne in mind that the enemy may be making use of this very high ground for the same purpose, and therefore utmost precaution must be observed.

When on high ground the scout must never become a "sky sign" to the enemy watching this particular locality. One way of obviating this is to study the background formed, and in this connection it is worthy of note that so deeply did the Red Indians study this point that they carried both paint and clothes of different colours to use when working in different countries, i.e., wooded, rocky, sandy, snowy, etc. This, of course, is not expected of the Infantry Scout, and is only here noted to show the importance attached by the most accomplished scouts in the world to background.

General Miles, the Commander-in-Chief of the United States Army, who spent many years of his early life among Red Indians, and whose recollections of them form the most interesting reading, states in one place "If it is in midsummer, everything worn will be of a green colour; blankets, leggings, moccasins, even the person's face and hands being painted green. If horses are used they usually select what is known as dun coloured or roan, and sometimes paint the animals entirely green, or the colour of sage brush-wood or dead grass. If it is a winter expedition, they generally choose horses as white as the driven snow."

Where commanding ground does not exist a good view of the surrounding country may be obtained by climbing a tree. Remember then that you are less conspicuous when lying along a branch or standing up or down the trunk. Never make for the most prominent tree; it is up such tree that the enemy will probably look for you.

If the country moved through is close or dense, every now and then the scout should halt and listen attentively. It is in country like this that the scout may be closely followed up and have little or no chance of knowing it.

When scouts are moving in a body, in either small or large numbers, it is essential that the advanced scout should in broken country continually indicate to the remainder the best route to take. When a large open tract of country lies ahead of the scout, with

possible coigns of vantage on the far side of this tract from which the enemy might observe him, he should only cross this ground by night, or else when possible circumvent it by a flank route.

Scouts must continually turn round and look to the rear at the ground which they have passed over to see what it looks like, from another point of view, so that in the event of having to retrace their steps there may be no difficulty in doing so. This is especially necessary where there are winding paths, and many of them, or where the country has very much the same aspect all round. Obliterate your tracks every now and then by walking in a water-way. When it is intended that scouts should be followed up by their own side, definite traces should be left of the route they have taken by making marks on the ground, by breaking branches in woods and where tracks are obliterated in water. A line of stones may be left a few yards off the track pursued on the near bank pointing exactly in the opposite direction to that actually taken, each stone composing this line representing, say, fifty yards. Thus, if you are advancing due north and come to a stream where it is intended to break the spoor, a few yards to the right eight stones in a line pointing N.-W., are laid out. This would be an indication to your friends that you have moved up the stream in an S.-E. direction for 400 yards.

A scout must always remember that from the point of view of security he has no front. While working in any particular direction he must keep a keen watch on both his flanks and constantly glance to the rear, or he may suddenly find himself followed up, and then it will be a case of the "scout scouted."

The ear like every other organ needs training to attain to the highest pitch of efficiency. What to one is absolutely inaudible to another is full of meaning. The proper training of the ear is one of the leading factors for night work. I believe the accepted theory is that the best results are obtained when the ear is kept about a foot above the ground. Constant practice is necessary in peace time to be of any use in war.

What applies to the ear also applies to the eye and perhaps more so. The more constant training and thought are necessary to train the eye to detect at once distant objects, movements, etc.; Kaffirs, Zulus, Red Indians by constant use of their eyes have them trained almost to the same pitch of perfection as our own eyes with the aid of field glasses.

A scout's eye should be perfect up to 2,000 yards, and it is surprising how soon men will improve when their brains have been set to work. In peace time it is as well hardly ever to allow men to use field glasses within this range. A scout should be able to pick out objects long before they are visible to the remainder of his comrades. Those who spend their lives at this kind of work are ever searching the horizon for some sign, and when that sign is forthcoming, training should give the power of drawing a correct deduction therefrom.

A point of much importance is brought out by General Baden-Powell in his *Aids to Scouting*. I will quote his own words, "And one point to remember, by the way, is that when you see a distant head bob down behind shelter, or any other suspicious sign, do not stop and look at it but go on with your movement and occupation so as not to arouse suspicion that you have seen anything, and probably more signs will soon be forthcoming: encouraged by not having been spotted, the enemy will continue to watch you more boldly or to move about thinking he is still unseen." There may be certain lines of advance which the enemy will most probably take, in which case watch them carefully. Those whose eyes are not trained are very likely to mistake distant objects, reporting them as quite otherwise than what they really are, and it is a *sine qua non* that the information sent should be accurate. It is quite worth while for those who are able to learn to imitate birds or the calls of animals of the forest, for when scouts are working in conjunction, each of these different calls may be made to denote some particular information, and some of these calls, such as that of a pea-hen, are quite easy of imitation with a certain amount of practice. At the same time the scout must remember that the enemy may make use of these self-same ruses. It is the pitting of one brain, one intellect, one cunning against that of another.

It is just these apparently small matters that are overlooked or disregarded as hardly practicable for the Infantry scout, which may mean the obtaining of important information. It is in just these details that lies "scholarship," if one may use this term to differentiate between a scout trained in accordance with *Infantry Training*, 1902, and one trained in accordance with the dictates of common-sense. Herein lies the true appreciation of scouting at its proper value.

It is essential that both negative as well as positive information should be constantly passed to the rear, if for no other reason, at least to show that the scout is still working and has not been captured; otherwise a commander might be waiting indefinitely, perhaps even to the destruction of some plan of his, for information which he is never likely to receive.

The commander cannot or should not move without definite information. The days have passed when the "blind" advance to the attack was made, or when the advance was blindly developed till friend and foe suddenly bumped heads together before any consolidation of plan took place. What is required nowadays is information as to where the enemy's flanks rest and where his reserves are concentrated. If in addition the weak spot in the enemy's dispositions can be located, the scouts may consider that they have done their duty, that they have rendered yeoman service to the cause. The time will come, probably, when the scout is brought to a standstill in front of the enemy and can advance no further. This is not a sign to him that it is the time to beat a retreat, but rather now is the time to stick to the enemy like a

leech, most carefully scrutinising his every movement, and sending back a constant flow of information to the rear. Should the scout be discovered and driven in, perforce he must retire, but the time may come when the enemy himself may withdraw; then comes the turn of the scout again to advance and assume the rôle of the leech once more.

Should the scout be far in advance of his side and have been perceived by the enemy, he may be in too critical a position to remain so far out, lest the enemy should amuse him in front while a party attempt to cut him off in rear. Discretion again must bid him retire, leaving as small an indication as is possible as to his line of retreat, and await a more favourable opportunity again to assume his work.

Accomplished scouts may even lead a party sent after them into an ambush, by drawing off in two portions, the one party decoying the pursuers into a position where they can be held up by the other party.

It is in cases of emergency and trouble such as these that presence of mind and courage are called for to extricate them, and such should be their cunning that their escape from an ordinary pursuing party of the enemy should practically amount to a certainty. If, on the other hand, a party of the enemy's scouts is in pursuit, then it behoves them to gird up their loins. It is a case of a thief set to catch a thief.

From whatever position a scout takes up, there must be at least one clear line of retreat, and the more there are the better the situation.

The action of the scout at night is very difficult, as confessedly all night operations are, and perhaps more practice is necessary for night work than for any other portion of this art.

The selection of ground to move over at night is one of both great difficulty and importance. Avoid moving on high ground as you would avoid poison, for you at once become a sky sign. One of the greatest difficulties encountered at night is the preservation of silence. If a way can be found through a wood or other enclosed country, where there is bound to be a certain amount of noise caused by the wind in the trees, then so much the better. It is here that the imitation of animal calls will be of help in keeping connection. Avoid any moonlit ground. What I have already said about noting the course you have taken by day, by constantly turning round and observing the country, applies equally at night, and by night your observations of the rear must naturally be much more frequent.

Avoid inhabited localities, where dogs may give warning of your presence. Never light a fire, otherwise than as a ruse, always camp in a hollow so that your enemy may be a sky sign to you—beware of being trapped in a house, however deserted and enticing the house may appear. If there is reason to believe that the enemy has observed you, then camp down quite comfortably as though nothing had happened, and when dark sets in change your position, lest they

may be waiting for darkness to capture you. Before night comes on learn all the approaches and exits to your camping ground.

If you can sleep up a tree by means of a rope cradle, which is not hard to construct, you may feel secure, but be certain that you are not being watched, for from a tree you have no line of retreat.

Lastly as a knowledge of the compass is necessary by day so is acquaintance of the stars by night. All are conversant with the means of finding the North by means of the North Star, the Southern Cross or the Moon.

Practice produces confidence; confidence in time of war is the scout's mainstay.

If scouts are surprised, do as the Red Indians did, "scatter," and if no other rendezvous can be arranged then meet where the last camp was.

Capture whom you can of the enemy and do not fight him; rather let him go than betray your errand, if by letting him go he can do no harm to your cause.

Bear the Zulu warrior's proverb in mind: "If we go forward we die, if we go backward we die, better go forward and die."

VI.—"THE EMPLOYMENT OF THE SCOUT."

The subject of scouting has hitherto been so little gone into, that naturally the employment of scouts is hardly understood.

A commander should, in giving instructions as to what is required of the scouts, at the same time inform the scout officer, of every single bit of information, confidential and otherwise, bearing on the particular undertaking.

From this moment a free hand should be given the scout officer to work independently as far as possible, and it is his duty at the same time to bear in mind what the intentions of the commander are. If he is not allowed very great latitude, his work will probably be hampered and prevent him from obtaining information.

Ordinarily on a field-day two opposing forces are placed opposite to each other in close formation with an interval of a few miles. At a certain hour they get the word "go" and operations commence. Out go the scouts helter skelter, on their heels comes the force moving almost as fast as they themselves are. Now what opportunity have scouts, under such circumstances, of obtaining information that can be of any value, or, at any rate, of obtaining it in time to be of any practical use.

Could not some means be devised whereby at the given hour to start operations the two forces are facing one another under precisely those conditions that one would expect on service.

If this can be done it would give the scouts a chance of working methodically and without being hustled.

In actual warfare before a commander attacked a position he would have to send out his scouts to obtain every possible item of information before he could stir. This might take hours, even days.

It is naturally hard to work under these conditions on a field-day where time, perforce, is limited, but again, hours as a rule should be sufficient to obtain information on a field-day, for the simple reason that the two opposing forces are bound to be within a comparatively short distance of one another. It ceases to be a question of the proximity of the enemy.

Now would it not be possible on field-days, when, let us say, hostilities are to commence at 9 A. M., that orders might be issued to the commanders of sides over night, thus allowing them time to get their intelligence section at work as soon as possible after daylight.

This subject has nothing to do with scouting, but so bound up with their employment that I have brought the question forward purely and entirely as a matter for consideration and without the very least intention of dogmatising.

The transmission of information obtained by the scouts should not be their duty any further to the rear than the support scouts. Scouts are usually expected by commanders to bring back their own information, and generally to act as connecting files and messengers.

These are duties that can be performed by men of ordinary intellect, and so it seems a pity to use a scout for this purpose, and moreover, as was pointed out in "the selection of a scout," he must be a man of superior mental powers. He is far too valuable to be thus used.

The transmission of information, and that with the utmost despatch, is of the very first importance, but it can be effectively carried out without employing scouts.

I submit that it is the duty of the Staff to arrange for the transmission of information from the support scout onwards signalling, telegraphy, telephone, mounted orderlies, motors, and many other means can be employed.

Information obtained, let us say by No. 1, must take some time to percolate through ere it arrives at its destination, and hence all and every means should be made use of for its transmission. Information that arrives at 10 A. M. may be of the utmost importance and may decide the issue of the day, whereas if it had arrived possibly at 11 A. M., the critical moment might have passed without that valuable information to guide the commander in his crisis.

In order to make adequate arrangements it is necessary for the Staff to have a thorough grasp of the "action of the scout," not necessarily as has been here suggested, but as may be laid down by those who are better able to judge and who have more experience. All that the scout officer and the scouts cry out for is "Let us have some approved system known to all, that all may inter-communicate, and we will try and do the rest."

It is only possible with this partially developed branch of the military art that a limited number can be conversant with the inner workings, and we are all, even those who are, shall I say, trained,

but on the threshold we are children compared with our native confrères from whom we can learn so much that we have never dreamt of. What I have tried in this lecture to arouse is an "awakening."

If we can only create interest, there are many who can put their heads together and evolve a system, a basis which we all so long for.

To end I will quote two extracts from Colonel Henderson's *Stonewall Jackson*. The men here referred to were mounted infantry or as they were called mounted riflemen. They were not cavalry, and so I do not hesitate to quote with this reference to infantry scouts; more especially as of the 72 scouts in my own regiment 67 of these are mounted infantry, and 48 have seen service.

"While the infantry were reposing in their camps near Winchester, the South bank of the Potomac forty miles northward was closely and incessantly patrolled. To the sons of the valley planters and farmers Ashby's ranks offered the most attractive career. The discipline was easy and there was no time for drill. But of excitement and adventure there was enough and to spare. Scarcely a day passed without a shot being exchanged at one point or another. Many were the opportunities for distinction. It was not sufficient for Jackson to receive warning that the enemy was advancing: he wanted information from which he could deduce what he intended doing; information of the strength of his garrisons, of the dispositions of his camps, of every movement which took place beyond the river. To penetrate the enemy's lines to approach his camps, and observe his columns, these were the tasks of Ashby's riders, and in these they were unrivalled. Many of them were no more than boys, but their qualifications for such a life were undeniable. A more gallant or high spirited body of young soldiers never welcomed the "boot and saddle." They were acquainted with every country lane and woodland track. The night was no hindrance to them, even in the region of the mountain and the forest. The hunters' paths were as familiar to them as the turnpike roads. More admirable material for the service of intelligence could not possibly have been found, and Ashby's audacity in scouting found ready imitators."

This raw material we have now amongst us, if we would only make use of it.

And lastly "In the army of Northern Virginia every commanding general had his own party of scouts, whose business it was to penetrate the enemy's lines to see everything and to hear everything, to visit the base of operations, and to note the condition and temper of the troops. Attracted by a pure love of adventure these private soldiers did exactly the same work as did the English intelligence officers in the Peninsular, and did it with the same thoroughness and acuteness. Wellington deploring the capture of Captain Colquhoun Grant, declared that the gallant highlander was worth as much to the army as a brigade of cavalry. Jackson had scouts more useful to him than many of his Brigadiers."

Major-General Smith-Dorrien after inviting discussion and getting no response said—

"The only reason I can think of why no one has raised any discussion on this lecture is that it is so clear and so thoroughly well worked out and so evidently the views of one who has studied every little detail, that there is little room for fresh suggestions or enquiries.

It is perfectly true, as the Lecturer has said, that nowadays there are so many subjects to be studied and learned by Infantry that it is almost impossible to expect every officer to be able to teach scouting equally well.

It is also perfectly true that Infantry Scouting with us is in its infancy, and is almost a foreign subject.

It will be remembered though how, not many years ago, both Musketry and Signalling were similarly situated, and special officers were told off to instruct in those subjects. The veil has, however, now fallen from those then hidden mysteries and everyone has more or less knowledge of these subjects. We shall, I consider, until scouting by dint of practice and study has become an equally familiar subject, have to trust to specialists, such as the Lecturer, to initiate their battalions into all the wiles and arts of scouting, and I feel sure that ere long this subject too will become so well known that every officer and non-commissioned officer will be able to teach it as a matter of course.

We Infantry people have so much real science to learn in our profession nowadays that it will be difficult to continue to class us any longer as a non-scientific branch.

To be a perfect scout is undoubtedly the study of a lifetime, and it is only those living a wild life whose perfect safety has had largely to depend on their hourly observation of Nature's movement to whom it comes as a second nature. Those who were in the Tirah Campaign may remember how one saw occasionally between houses in the same village a large stockade implying that the families living in them had a blood feud, necessitating constantly watching each other's movements if they wished to remain in this world. I remember after we had taken a large village, one old Afridi plucking me by the arm and pointing out his house between which and the next one was a large stockade. He said in a suppressed voice 'You are not my real enemy—my real enemy lives in that house.' In South Africa we benefitted enormously from the natural scouts we found amongst our Colonial troops. Two Canadians I especially remember—a Corporal Callaghan and Private Davis—the latter was half Red Indian. These men would go anywhere. I remember in the middle of the night at Lake Chrissie whilst my camp was surrounded by Boers, Callaghan suddenly appeared—later on Davis. They had brought a despatch from General French some 40 miles in a strange country, and finding the Boers attacking, they joined in with them. Then at one moment seeing a Boer had discovered him Callaghan described as though it was quite a natural occurrence how he put his rifle to the man's back and just left him kicking and breathing his last on the ground, whilst he went and hid the despatch under a stone. He had come in the dark into my camp without his despatch, but when the fight

was over he had no difficulty about going straight to the stone, three miles off, and bringing the despatch in.

Well these were scouts of the very highest order who remembered every piece of ground they passed over and who could find their way by instinct. We can hardly expect quite to train up to such high pitch as this, but a great deal can be done by teaching the men regularly to observe and report what they have seen. On this latter I lay the greatest stress. Where we fail so is in transmission of information. Men see things but don't think them important enough to report, whereas quite small matters very often give a Commander an inkling of what the enemy is doing. Major Spearman I see advocates sending back a scout with information, but this is a difficult matter under the enemy's fire.

I was much struck this year with the Suffolk Regiment at Karachi. Each officer had a small megaphone with which he could talk with ease to anyone two or three hundred yards off. Why not give these to our scouts and information could be passed back with a minimum of exposure. One most important matter for scouts is first rate glasses. Government has done a good deal lately in the provision of binoculars, but far more is required. The Japanese have fully recognised this, and the number of field glasses they allow a battalion is out of all proportion to what is allowed in our Army.

General Walter Kitchener instituted a most useful system of instruction in his division last year, which system we are now practising in this division.

To enable the regimental scouts to have every chance of practice, I am arranging to let them go away into the country with transport complete for a week at a time. I also think that for training from Barracks Commanding Officers would do well to divide the ground round Quetta into sections, companies taking different sections each day of training.

Again, the scouts of one company should frequently practise against the scouts of another company, each company with a special idea, scouts reporting everything they see of the hostile scouts.

There are several matters of material importance which can only be acquired by daily practice, such as the sender of a message being able to describe his exact locality, when he sent the message with hour and date, the avoiding the danger of a verbal message getting changed in transit by making it a rule that whenever a message either in Barracks or the field is given the person who has to take it is made to repeat it before he departs. This system is used by Colonel Gordon of the 32nd Lancers, and it is very seldom in that corps that a message goes wrong or gets misconstrued.

It only remains for me to express our thanks to Major Spearman for the most excellent and useful lecture he has given, and finally for me to hope that all officers will carefully study all the points he has brought out with a view to training those under them on similar lines, so that it may no longer be said that scouting is a foreign subject to infantry.

PRECIS OF FOREIGN MILITARY PAPERS.

FRENCH PAPERS.

BY CAPT. J. W. E. DONALDSON, R. A.

REVUE DE CAVALERIE.

April, May, and June.

The April number opens with the first of a series of articles dealing with the bearing of the two years' service law on the training of the cavalry soldier for war. The article is only of interest to other than French readers as showing clearly the difficulties engendered by short service in the war training of the mounted arms. The writer is of opinion that the training of the cavalry soldier may be divided into two parts: firstly, the creation of that "morale" so essential to the proper performance of all mounted duties, and, secondly, discipline, drill and instruction. In the April number only the former of these is dealt with and some 24 pages are devoted to an expansion of the principles briefly laid down in our Cavalry Training, 1904, section 251 (p. 231). In the May number the discipline and system of instruction suitable to the two years' conscript is discussed, but the continuation of the subject is omitted from the June number.

M. Pierre Lehautcourt contributes an interesting article on the surprise of Forton's Cavalry Division on the 16th August 1870. He begins by setting forth in detail the situation on the night of the 15th and the exact strength and position of all the outposts. A vivid description follows of the panic and confusion in the French Camp when the first Prussian's shell burst among the bivouacs. Commenting on the action the author dwells particularly on the faulty disposition of the French outpost line, on the extraordinary apathy of the French commander, Forton, who had numerous reasons for expecting attack, and, lastly, on the tactical error committed by the Prussians in not following up their shell fire with a vigorous attack. The Prussian failure to seize this opportunity reduced their tactical success to a minimum, but, none the less, the strategical advantages they secured were very considerable. The article concludes by drawing attention to the sense of numerical inferiority always experienced by a force surprised.

The series of articles on our latest Cavalry Training is completed by a translation of pp. 211—234 and of that portion of the King's Regulations referred to on p. 238.

Running through the May and June numbers is an analysis of the series of articles on Cavalry in the Russo-Japanese war that appeared in the *Militär Wochenblatt* of April. Read together they afford some insight into the points of view of the two nations.

The chief interest of the June number is a tactical study of the battle of Sikkak fought on the 6th July 1836, in which a French column under Bugeaud utterly routed a strong force of well-armed Arabs under the Emir Abd-el-Kadr. Lieutenant-Colonel Aubier, the author, draws attention to the instructive nature of the incidents of and preceding the battle, to the critical situation of the French forces in Africa at that time and to the important and far-reaching results of the victory. For these reasons, it is maintained, the study of this action is at least as profitable and as desirable as the study of the well-known battle of Isly.

After stating the situation at the beginning of 1836 and tracing the course of the campaign and frequent failures of the French commanders to effect anything until the arrival of Bugeaud in June, the writer, by means of quotations and extracts from Bugeaud's letters and reports, clearly indicates the methods by which that commander ensured the success of his operations. Bugeaud had had some experience of mountain warfare in Spain, and, applying that experience, he organised his force as a flying column equipped with mule and camel transport and mountain artillery only. But this was not the only point on which his methods differed fundamentally from those of his predecessors in Africa. Whilst the latter had invariably either attacked the Arabs in their hill fastnesses or endeavoured to avoid a collision altogether, Bugeaud determined to bring about a decisive action on ground of his own choosing. To attain this object he relied on mobility and consequent power of manoeuvre.

Colonel Aubier brings out very clearly how thoroughly and accurately Bugeaud appreciated the situation and the character of his opponent Abd-el-Kadr. The movements of the French column from the 15th June to the 6th July are carefully followed and discussed, while the description of the action on the Sikkak is full of interest. Bugeaud's accurate forecast of the attack on the head and rear of his columns and his acumen in guarding against possible confusion and panic by informing his troops overnight of the nature of the attacks to be expected are well brought out. The particular points to notice in the battle are the success of the square against even well-armed fanatics, the definite and well-thought out plan adopted by Abd-el-Kadr and his formation and utilisation of a general reserve under his own command. Both of these latter are somewhat foreign to the methods usual with the leaders of semi-civilised forces.

Commenting on the brief campaign, the writer shows how peculiar circumstances demand peculiar methods, and how it is consequently essential that the ordinarily accepted rules for the conduct of warlike operations should be departed from at times. The square, he points out, is under ordinary circumstances a vicious formation. His discussion of its merits and demerits is to the point, but contains nothing new. He concludes by showing how by reason of the prudence of the preparations, the vigour of the decisions

and the celerity of their execution, the conduct of this campaign is verily a complete exposition of the art of war. The value to a commander of moral courage, the proper application of the laws of strategy, and the skilful tactical employment of all arms, are particularly emphasised.

REVUE MILITAIRE SUISSE.

May and June.

The May number opens with an article by Colonel Weber on the battle of Mukden. The terrain and the positions held by the belligerents in early February are accurately described, and the operations resulting in the capture of the Tsinpotschön Pass by Kawamura on the 24th February, and the occupation of the line Banjupousa-Wanfulin-Kautalin by Kuroki on the 27th are carefully followed. It is shown how these movements combined with Nodzu's demonstration, supported by heavy artillery in the centre, succeeded in diverting Kuropatkin's attention from his right to his left and even induced him to weaken his right by the transfer of the 1st Siberian Corps to Fuschun.

Kuropatkin, having, as he thought, secured his left, attacked Oku on the Hunho, who at first merely defended himself. In the meantime Nogi, covered by his cavalry, had made forced marches round the Russian right and on the 2nd March reached the Sinmintin-Mukden road 14 kilos N.-W. of Mukden. Kaulbars, who commanded the Russian right, weakened by the withdrawal of the 1st Siberian Corps and attacked both by Nogi and Oku, took up the line Tanfansitan-Madjapu-Wöntschnpu, where he connected with the Russian centre at Linschinpu. By the 4th March Oku had connected with Nogi, and Kuropatkin reinforcing his right with 10th Russian and 1st Siberian Corps counter-attacked Nogi, by whom he was repulsed with heavy loss.

Colonel Weber draws attention to the complete change in the situation that the Japanese manoeuvres had effected. Kuropatkin instead of enveloping his adversary was now being enveloped himself. Further, in order to reinforce his threatened wing, his columns had to cross the only road available for his communications, and great confusion ensued.

On the 6th and 7th a general artillery duel took place, and on the 8th Kuropatkin again attacked Nogi, while Oku succeeded in forcing himself like a wedge between Kaulbars and Bilderling, who commanded the Russian centre, thus necessitating the retreat of both Bilderling and Linievitch to the Hanho. During this operation Kuroki, pressing his attack, succeeded in interposing a small force between Linievitch's left and centre, and thus breaking the Russian line.

In consequence of this Japanese success, Kuropatkin ordered a general retreat on the 9th. Owing to the vigorous action of

Kuroki's advanced guard artillery the retreat degenerated into a rout, and the Russian's losses were enormous—90,000 men killed and wounded, 40,000 men and 57 guns captured.

Colonel Weber concludes his article with some general comments on the battle. The points he principally touches upon are—

(i) The too great extension of the Russian line and the danger of attempting to fall back to a second position when once the enemy has begun his attack.

(ii) The daring of Oyama's plan of attack, and the hazards he accepted and the skill with which he minimised them.

(iii) The fact that the loss of only 57 out of 1,300 guns proves that the Russian artillery was not used to the best advantage.

(iv) Kuropatkin's apathy and lack of initiative as shown by his doing nothing beyond conforming to the movements of his foe.

Major de Muralt's paper on Flanking Positions is continued in both the May and June numbers. In the former he exemplifies his meaning by an example from actual warfare and in the latter by one from manœuvres.

Selecting the operations of Werder and Bourbaki about Belfort in January 1870, Major de Muralt points out the strength and advantages of Werder's flank position at Vesoul and the weaknesses of Bourbaki's at Villersexel.

Bourbaki's object was to raise the siege of Belfort, which clearly could not be effected by the taking up of a position. Werder's object was to cover the siege, and being numerically much inferior, a defensive position was equally clearly essential to his success. The essentials to a flank position are shown to be—general strength, but particularly strength on the flank nearest the enemy's line of advance, secure communications and sufficient facilities for offensive action to preclude an enemy from masking the position with a portion of his force while he marches on his objective with the remainder.

Turning to manœuvres (June number), a good example of the value of the flank position is found in the Swiss manœuvres of 1904. Taking the situation on 7th November, alternative flank positions for the defence of Lucerne are suggested and their advantages and disadvantages discussed. The special advantages that may be claimed for positions of this type in mountainous country are brought to notice, and it is shown that the main disadvantage in any country is that defeat in one of these positions means that the enemy cannot further be delayed in the attainment of his objective. Major Muralt, however, points out that this disadvantage is considerably discounted by the fact that the destruction of the hostile armies and not the occupation of places is the true object of operations of war.

First-Lieutenant Cornaz in a brief article draws attention to the increase in efficiency that is to be obtained for the personnel of an

army by the encouragement of athletic sports amongst all ranks. He points out the value of cycling, especially in the education of officers. Mountaineering teaches endurance and a familiarity with danger. Ski-ing would be an invaluable accomplishment for scouts in event of a winter campaign in high mountains. Swimming, he considers, should be taught all ranks, and he points out how far less formidable as an obstacle a river would be if all, or even a large majority, could swim. Walking and running are in reality essential accomplishments for the soldier.

Short articles on the "Springfield" Rifle, 1903 model, and on the new Italian Artillery Training find places in the June number.

REVUE DE CERCLE MILITAIRE.

1st April to 17th June 1905.

The series of articles on the Russo-Japanese War runs through all the numbers. These articles are evidently contributed by a correspondent with the Russian forces, and consist mainly of personal anecdotes. The story of the battle of Liao Yang is concluded in the 1st April number with a description of a scene in a Russian Field Hospital.

The battle on the Shaho from the 10th to 18th October is next dealt with. The author, after quoting the well-known order of the day of 2nd October, gives a brief resumé of the operations. On 5th October the Russians, 1,60,000, in three columns, moved against the Japanese position on the Shaho, which they attacked on the 10th. The main effort was directed against the Japanese right, but the Japanese on 13th-14th counter-attacked with their left and centre, obliging Kuropatkin to utilise his reserve to restore the battle at that point. On the evening of the 16th the Russians succeeded in capturing and holding the Poutiloff and Novgorod Hills on the Japanese bank of the river. The attempt to re-take these hills failed, and on the 18th the struggle ceased. The Russian losses are estimated at 42,000, the Japanese at 16,000 and 11 guns.

The following number contains an interesting description of the Russian attack on the Japanese right about Ben-si-pu, which is supplemented later by the personal experiences of officers of Russian Dragoons and 9th Siberian Infantry.

The destruction of three Russian batteries by columns of Japanese infantry is vividly described. This incident is particularly interesting as demonstrating the artilleryman's difficulty in distinguishing friend from foe even when the physical characteristics of the belligerents are as distinctive as those of the Russians and Japanese.

The reorganisation of the Russian forces after the operations on the Shaho is next noticed. Kuropatkin, having been appointed Commander-in-Chief of all the Russian forces in the Far East, the Russian land forces were divided into three armies: 1st army Liniewitch, 2nd army Grippenbergh, 3rd army Kaulbars. The total

Russian forces are estimated at 412,050 with 1,282 guns, from which total 132,000 must be deducted for fortress garrisons and line of communication troops, leaving a field army of 270,000. The Japanese forces are put at 262,400 with 780 guns.

The history of the Siege of Port Arthur includes a criticism of the Japanese strategy in undertaking the siege at all at such an early period of the war. The author points out the very large detachment from the main field army it entailed, and that its strategical value when captured was out of all proportion to the enormous losses suffered by the besiegers. The author's criticisms, from a purely military point of view, are perhaps sound, but its value as a naval base seems to be under-estimated, as are the political reasons, founded chiefly on sentiment, for its capture.

Leaving the land operations at the end of 1904, the movements of the Baltic Fleet are followed and a brief description is given of its destruction by Admiral Togo's fleet in the naval battle of Tsushima.

Captain Dollfus, in a brief article, draws attention to the methods adopted in Switzerland to attain a high standard of efficiency in musketry. He brings out very clearly how much can be done by State-aided Rifle Clubs and courses of preparatory military training.

Beginning with the 3rd June number, Lieutenant Schilizzi contributes a brief history of the invasion of Provence by the Austro-Piedmontese in 1746-7. Tracing the progress of the war of the Austrian Succession, the writer touches on the battles of Dettingen (27th June 1743), Fontenoy (10th May 1745), Bassignana (September 1745), and Rottefredo (16th June 1746), in which last engagement Lichtenstein's Austrians routed the French and Spanish forces under Maillebois, who fell back on Genoa. This State, however, threatened by a British fleet and by the victorious Austrians, deserted the French cause and obliged Maillebois to march on Nice. In the meantime Phillip V of Spain died, and Ferdinand, tired of war, withdrew his forces, and Maillebois retired behind the Var.

Lieutenant Schilizzi, at this point, appreciates the situation and criticises Maillebois' action. Maillebois reached the line of the Var and the Austrians Nice at the end of October 1746. The situation is again appreciated, and the Austrian plan of campaign given and criticised.

Maillebois was now relieved of his command by Belle Isle, whose dispositions for the defence of Provence are given in detail. On the 26th November General Maximilian Ulysses Brown was appointed to the command of the Austrians, and on the night of 29th-30th November forced the passage of the Var at Baronnie. This action is of special interest by reason of the successful co-operation of the British fleet. The number of the 17th June concludes with the situation on the 10th December.

Lieutenant Thiery continues his series of papers on Infantry Training which appeared in the numbers of August, September, October, and November 1904. The particular points he emphasises

are the necessity for teaching initiative to commanders of the smallest units, and even to individual soldiers, for constant practice in the use of ground for the teaching of intelligent co-operation among all ranks and for the careful instruction of all ranks is the most suitable methods of obtaining superiority of fire. He brings to notice the necessity of a certain knowledge of tactics among even the most junior leaders if intelligent co-operation is to be expected. The question of long-range infantry fire is touched upon, and its inadvisability, except under certain particularly favourable circumstances, is pointed out. It is suggested that, failing a range-taking instrument, it is desirable that there should be a percentage of specially selected judgers of distance in each company, the mean of whose opinions would approximate very closely to the true range.

PRECIS OF THE GERMAN PAPERS.

BY MAJOR H. W. R. SENIOR.

Internationale Revue ueber die gesamten Armeen und Flotten (June, July and Supplements):—From the June number we learn that the effect of the change in the recruitment laws of the German army, which have been lately recast, will be to raise the peace strength of that army by 1909 to 505,389 men. This force will be disposed in 633 battalions of infantry, 510 squadrons of cavalry, 574 batteries of field artillery, 40 battalions of heavy artillery, 29 battalions of pioneers, 12 battalions of communication troops and 23 battalions of train. In France this new arrangement is causing some uneasiness, for the preponderance of guns in the German army to those in the French army is very great. The former will be able to put 3,444 guns into the field against the French 2,000. This difference is emphasised by the German field howitzers, which are said to be more powerful than those of France. A very large proportion of the remainder of this number is taken up with naval matters. Of these the following comparison of the strength of the personnel of the different fleets may be of interest:—

France ...	...	with the fleet, 53,500	men ;	in the reserve, 50,000
Italy ...	...	ditto 27,000	"	ditto 33,000
Russia ...	...	ditto 68,000	"	ditto 65,000
Japan ...	...	ditto 37,000	"	ditto 20,000
Germany ...	...	ditto 38,000	"	ditto 70,000
England ...	...	ditto 131,000	"	ditto 60,000

It will thus be seen that the reserves of the British fleet are quite inadequate. The July number informs us that special technical Staff Rides for the training in their duties in war of the officials of the German Supply and Transport organisations have been decided on. These Staff Rides are to be preliminary to the Imperial Manœuvres, in which, in future, supply and transport arrangements are to be carried out on strictly war conditions. Their management is to be one of the duties of the Chief of the General Staff.

German Supplement No. 62 gives a very complete account of the Chinese army. After describing the organisation of the old Chinese Forces of the "Manchu Bannermen" and the provincial militia of the "Green banner troops" this Supplement details the first attempt made in 1901 by Li-Hung-Chang to form a modern army by the aid of German instructors. This attempt resulted in the partial reorganisation of some of the troops in the Pe-chihli and Hu-pei Provinces. China's "Grand old man," however, died before he could complete this work. His mantle fell on Yuan Shih-kai. The reorganisation instituted by this viceroy is based on the

conscription of a certain proportion of the inhabitants of each district each year. The men taken must be of good character and between 20 and 25 years of age. They must be physically fit, being required to cover 20 *li* (i.e., six miles) in one hour, and to lift a 100 lb. weight, using both hands, to the level of the breast. Service is fixed at three years with the Colours, three years with the Reserve, and three years in the National army. The last two categories are to be called out yearly for one month's training.

In future officers will be provided principally from the military schools, of which there are 22 with 3,374 cadets, 120 students, 100 Manchu students and 620 officer students. Only in the Provinces of Ho-nan, Kuang-si and Kan-suh are military schools non-existent, though as there is one in Chinese Turkistan it is difficult to understand why these Provinces are so behindhand. Officers must be of good family and must pass an examination in their physical capacity to bear the fatigues of military service in such a manner as always to be an example to their men. In the military schools they are taught the usual military subjects, inclusive of topography, and exercised in drill with and without arms, in field duties, gymnastics and in shooting. The Japanese regulations are followed, and some 200 Japanese officers were, before the outbreak of the war, employed as instructors in these schools. The principal fault in the system of instruction has been that no foreign language was taught, and the Chinese officer was thus deprived of any opportunity of keeping up or improving his military knowledge. This has now been altered, and the cadet schools are divided into three sections according as Japanese, English or German is the language taught. Instruction in the chosen language continues throughout the eight years' course of study, which the Chinaman, who now hopes to become an officer, must undertake. This course consists of three years in the cadet school, two years in a military preparatory school and three years at the war school.

A military school for the instruction of Chinese nobles on the lines of the Japanese Nobles School in Tokio is being founded in Peking. To this the old Dowager-Empress has subscribed 50,000 *taels* (£6,666) from her private purse. A Staff College is to be formed in Peking on the lines of the Staff College founded in 1902 at Pao-ting-fu by Yuan Shih-kai. A special school of instruction in strategy and tactics, technical schools for artillery and engineers, and a school of instruction in military music, as also several cadet schools are to be formed in Peking. All these are to be manned by Japanese instructors and to be conducted on the Japanese system. A few German military instructors remain in the military schools of Wu-chang, Tsi-nan Fu and Nan-king, otherwise the large number of Germans, who were in Chinese service in the nineties of the last century, have been replaced by Japanese.

There is no limit of age in the military schools, consequently men of 46 may be seen at work alongside of youths of 16. The

course of instruction lasts four years, but those who fail to pass out are permitted to stay on even for eight years. The students are not, however, compelled to go into the army, and it is said that only 10 to 12 per cent of them do so. This is naturally a great loss of power and waste of the energies of the military instructors in these schools.

Military medical arrangements at present only exist in the 1st Division at Yung-ping Fu, and at Pao-ting Fu, where a great hospital has been built. A medical training school has been started at Tientsin. This is equipped with a staff of French teachers.

New barracks are being built for the newly-raised troops. They are placed round a large drill square with their kitchens, bells-of-arms and latrines behind them, the whole being surrounded by a mud wall and dry ditch with a guarded entrance. The officers are to live within with their men, but all families must remain outside.

As officers trained at the Pao-ting Fu Staff College become available it is intended to form a General Staff. No. 84 of the *Militär Wochenblatt* states that the formation of an Intelligence Branch has been already commenced, and that Chinese officers are to be sent as *military attachés* to study foreign armies.

The Pei-yang army of five infantry battalions, three cavalry squadrons, three batteries artillery with 24 guns and one battalion of pioneers has a total strength of 7,500 men. It garrisons Peking and Tientsin.

The three new Divisions formed by General Yuan Shih-kai are stationed as follows:—1st at Yung-ping Fu near Shan-hai-kuan, 2nd at Ma-chang on the Grand Canal some 40 miles south of Tientsin, 3rd at Pao-ting Fu. The strength of each Division is—

Infantry, 2 brigades of 2 regiments of 3 battalions of 500 men each	...	...	...	= 6,000	men
Cavalry, 1 regiment of 4 squadrons	...	...	...	= 700	"
Artillery, 1 regiment containing 2 brigades of field artillery each of 4 batteries of 4 guns (32) and 1 brigade of mountain (16)	...	...	...	= 1,100	"
Pioneers, 1 battalion	...	...	...	= 500	"
Train, 1 battalion	...	...	...	= 500	"
Medical, 1 sanitary detachment	...	...	...	= 100	"
Total	...	...	...	= 8,900	"

Four thousand Manchus are also being trained at Pao-ting Fu. They form the nucleus of the 4th Division which is in process of construction.

The army of observation under General Ma, which is on the Manchurian frontier, consists of—

Infantry, 15 battalions	...	...	...	= 7,500	men
Cavalry, 5 squadrons	...	...	...	= 900	"
Artillery, 3 brigades	...	...	...	= 1,100	"
Total	...	...	...	= 9,500	"

The Huai army in the Province of An-hui is of no military value now. It is very variously armed and totals some 7,000 men.

The Ho-nan troops in Peking are paid by their own Province. They consist of—

Infantry, 8 battalions	...	...	...	4,000	men
Cavalry, 1 squadron	...	...	...	210	"
Artillery, 1 brigade	...	...	...	400	"
Total				4,610	"

Near Peking also are two strong battalions of Hu-pei troops (2,000 men).

In Pao-ting Fu besides the regular division there are eight weak battalions of Shan-tung infantry (2,000 men), south of Tientsin in Tsang-chou are Kiangsu troops—

Infantry, 9 companies	...	...	...	2,250	men
Mounted infantry, 1 company	...	...	...	500	"
Total				2,750	"

A full account of an inspection of these troops made by some German officers of the Legation Guard is given. Their verdict is that the turnout and training could not be better.

The European trained troops detailed above total about 56,000 strong with about 200 guns. They are armed with Chinese and Japanese breech-loading rifles and with guns of Krupp models.

Last year for the first time regular manoeuvres were held near Pao-ting-fu under the direction of Japanese instructors. They were considered to be a great success.

The 64th German Supplement describes the reorganisation of 1903 of the Spanish army. By this Spain is divided into seven military districts each of which is the area from which an army corps is to be drawn.

Militär Wochenblatt (Nos. 53—89 and Supplements Nos. 5—7):—Nos. 59 and 61 contain articles on the training of the cavalry soldier by Captain Von Ebert of the Royal Saxon Cavalry Brigade. The author strongly advocates less riding school and more practical instruction in the field, especially in combination with small detachments of the other arms, as this is the only means by which reconnaissance can be learned. The author also strongly advocates greater attention to the musketry training of the men. In No. 71, however, Major-General Schmalz falls violently on these suggestions. The view taken by this critic is that riding can only be learned in the riding school, and that without the steady drill of the drill field the German cavalry will be unable to attack, for which trained horses and trained riders are necessary. To follow Von Ebert's suggestion is to obtain, he thinks, hybrid troops, who could not be designated satisfactorily even as "mounted infantry." The Major-General is evidently a firm believer in the "*arme blanche*" school, for he says—"The best training in musketry and reconnaissance duties will help us nothing if we are unable to attack."

No. 74 gives a description of our new field gun and very favourably reviews Major Knapp's article in the "Proceedings of the Royal Artillery Institution" on the organisation of field artillery in eight gun batteries.

No. 79 has two very interesting articles. The first deals with the question of the defence of Denmark, which is seriously troubling the Danes. One Danish party aims at increasing the army and the fleet to the fullest possible extent. Another claims that no sacrifice would produce a fleet or army of sufficient size to ensure the defence of the kingdom, and puts its trust in the fortification of Copenhagen, the defence of which would give the Powers interested in the preservation of Denmark time to come to her rescue. A third points out that neither armed forces nor fortifications would avail Denmark in the day of battle: that it is her geographical position, commanding the Kattegat, the only entrance to the Baltic, which excites the cupidity of the Great Power to the south. In the opinion of this third party her only hope therefore is to obtain a general agreement with all the Powers acknowledging the neutrality of these waters, and consequently of Denmark herself, and then to disarm!

In the numbers under review there are many interesting articles on the Russo-Japanese war. That in No. 79 reviews the cavalry raids which have been made by both the combatants. After lightly touching on Tschering's raid to Cassel in 1813, the destruction of the Saargemünde Railway Bridge on the 24th July 1870, the capture by Barboschi with a Cossack Regiment of the Pruth Bridge on 24th April 1877, and Gourko's great raid across the Balkans, the author goes on to describe the situation in Manchuria just after the fall of Port Arthur.

The capture of Port Arthur by the Japanese had made the destruction of the railway to the Liaotung Peninsula a matter of great importance to the Russians. For though, owing principally to shortage of railway stock, the Port Arthur investing army could cover the 222 miles to the front by route march as soon as by rail, yet the line was necessary for the carriage of heavy guns and ammunition. The task of breaking this railway was consequently entrusted to General Mitschenko with a Cavalry Division of six Cossack Regiments and three batteries. This force divided into three columns on a front of eight miles advanced on the 10th January, the left column moving direct on Niu-chuang. The Japanese protected their railway-line by columns of single companies of infantry moving about the country at some distance from the line. One of these under a Captain Jasuhara encountered the Russians, and by means of bonfires spread the news of the movement far and wide and itself took up a position in a village, where it delayed the advance for some hours till its defences were rendered untenable by artillery fire. Forty men then broke through covered by the fire of some 15, who, to avoid capture, finally committed suicide. The Russians beside much valuable time lost 9 officers and 40 men killed and wounded. The other two columns

reached Niu-chuang and drove out the Japanese garrison, but instead of pressing round to the railway they occupied themselves in removing convoys of carts found at Niu-chuang. The next day Mitschenko detached 10 Sotnias and a battery to Yinkow, where, while they were unable to effect anything, their absence so weakened his main force that though he tore up some of the railway near Haicheng and destroyed a bridge at Tashi-chiao he was soon driven back by the gathering Japanese and was unable to hold the line sufficiently long to do damage really difficult to repair. His loss was 39 officers, 328 men killed and wounded.

On February 18th another raid by 80 Russian squadrons damaged the railway a few miles south of Haicheng, but soon had to retire.

The concentration for Mitschenko's first raid happened to synchronise with raids by two small Japanese forces of 150 selected men each under Majors Naganuna and Sasagawa and the Russian cavalry concentration doubtless helped these Japanese forces to get through the Russian lines. Sasagawa succeeded in breaking the line 90 miles from Harbin at Boduis. Naganuna blew up the bridge over the Hsinkao, 150 miles north of Mukden, on the night of the 11th February. Next morning, attacked by a force of Cossacks double his strength, who had, moreover, two guns, he drove them off and captured one gun. This force covered 290 miles in 43 days mostly moving by night. Sasagawa was away for 63 days and only rejoined on the eve of the battle of Mukden. The alarm he succeeded in spreading in the Russian rear led to the withdrawal of considerable cavalry forces from Kuropatkin's right wing, which doubtless facilitated General Nogi's turning movement.

The large forces employed by the Russians could not be composed of selected men, consequently their rate of movement was that of the weakest men and horses. Ice-bound roads, the dreadful cold of a Manchurian winter, want of maps, the necessity of reconnoitring on foot in an enclosed country whose inhabitants were hostile, the difficulties of supply, all told against the Russians; while the small specially-selected bodies of Japanese were able to make full use of their mobility and greater power of concealment, in which of course the friendliness of the Chinese gave them much help.

Supplement No. 5 contains the history of the "*Invaliden Haus*" at Berlin.

No. 6 has two articles, the first of which is an account of German South West Africa, the second by General Von Rohne deals with colonial wars. The latter has many interesting observations on the method of carrying out war in savage countries. The war in Africa has brought home to the Germans the difficulties which are inherent in the protection of distant colonies planted in the midst of savages. General Von Rohne suggests the formation of a special colonial army in two parts—the one portion to be divided, as actual garrisons during peace time through the various colonies, the other to be kept at home, though carefully and specially trained and equipped for such warfare. In case of trouble in a colony

which could not be dealt with by its own garrison, a force from the colonial army stationed at home would be shipped to the seat of the disturbance. By this means it is hoped that the dislocation of the arrangements of the regular army for Home Defence would be unnecessary, and service in the colonial army being voluntary and well paid, the unpopularity of drafts for foreign service would be avoided.

The 7th Supplement gives an account of the old Hanoverian army. A curious proclamation raising a couple of regiments at Lüneburg in 1813 is given. This promises the new corps "English pay" and ends with the call "Up! for Freedom, Fatherland and King!" another little proof, if one be still wanting, of how England saved Europe in those days.

TACTICAL SCHEME COMPETITION, JANUARY 1905.

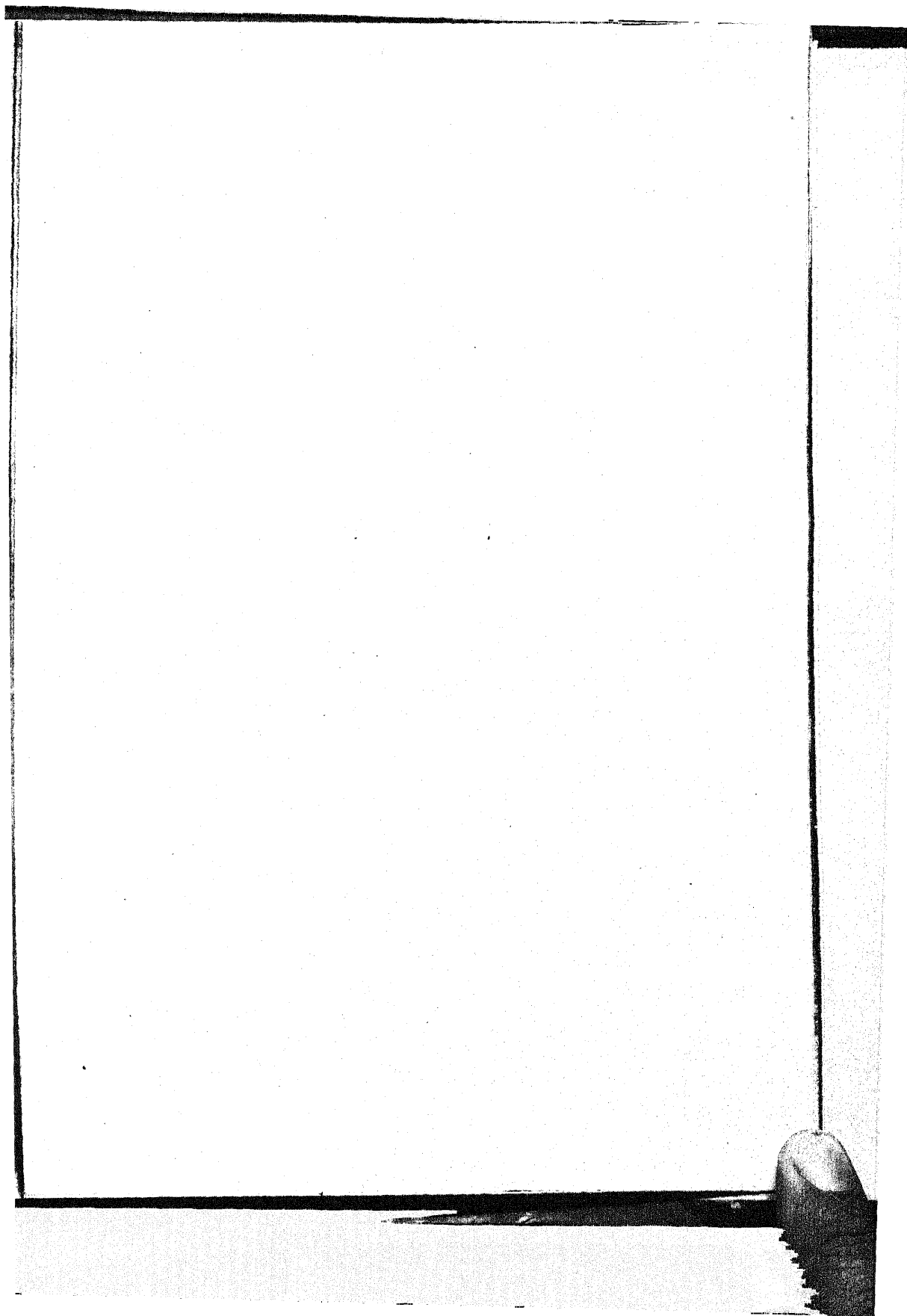
There were 57 candidates, of whom only 25 competed.

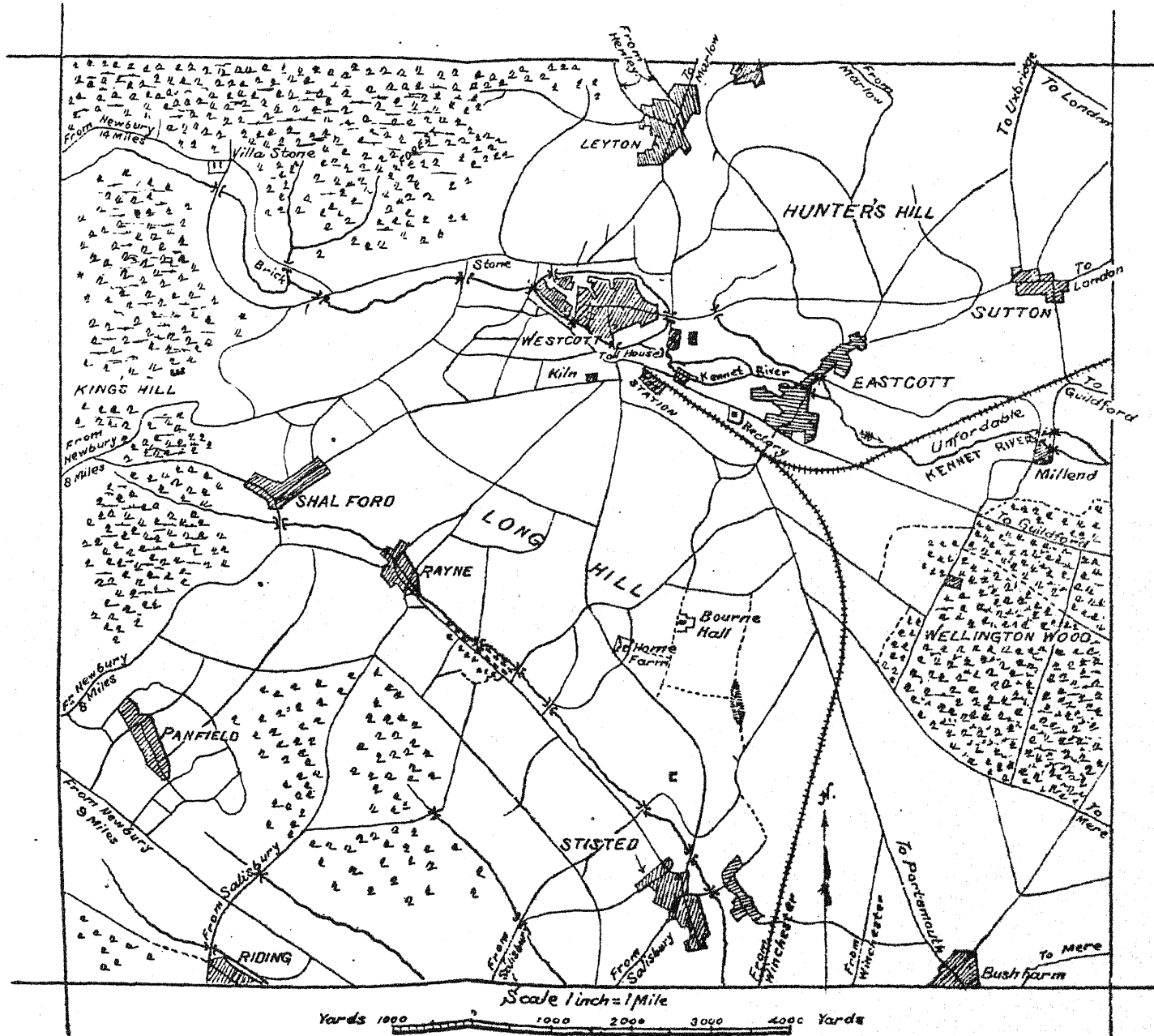
Major F. E. Johnson, R. F. A., *nom-de-plume* "SLIM JIM," has been awarded the prize of Rs. 50 as the winner of this competition.

For the information of the competitors, the winning solution is published *verbatim* (with a sketch of map E) on the following pages.

The *nom-de-plumes* of competitors are given below for the information of those concerned :—

1. "Slim Jim."
2. "Never say die."
3. "Vincere est Vivere."
4. "Via Una, Unam Cor."
5. "Dulcis Amor Patriæ."
6. "Sursum Corda."
7. "They turn on the pursuers,
they murder all the followers."
8. "Patrol."
9. "Index letter S."
10. "Nil Desperandum."
11. "Practice makes perfect."
12. "Cruachan."
13. "Fortitudine et Prudentia."
14. "In hoc Signo Vinces."
15. "Vivit Post Funera Virtus."
16. "Strenuous."
17. "Kabul."
18. "Cygnus."
19. "Strong places are useful in
defensive war, etc."
20. "Schaf Kopf."
21. "Vigilantia non Cadet."
22. "Centurion."
23. "Punjabi."
24. "Pluribus assusce mentem."
25. "Propatria."





N.B. - Roads showing thus ———

if any, are on the road from MARLOW—and open up communication with Colonel B. If the cavalry could capture a few prisoners some useful information could no doubt be gleaned from them. In this connection it must be remembered that the Northern power has but few cavalry; the Southerners, therefore, possess this advantage that they should be able to carry out reconnaissance with their cavalry without let or hindrance, prevent the Northerners gaining any information by this means. On the other hand the inhabitants are hostile to the Southerners, and will therefore give more willing and accurate information to the enemy than to them. Whatever the enemy's plans may be, the detachments encountered to-day do not represent his main columns, but are advanced guards or detachments pushed forward to cover the crossing of the Thames by the main body.

The task before Colonel A is to delay the enemy's advance. He may do this in three ways—

- (1) By attacking the enemy in front of him.
- (2) By taking up a series of defensive positions compel the enemy to deploy as often as possible, retreating to another position in rear, as soon as the enemy's attack develops—pursuing in fact ordinary rear guard tactics. When within about two miles of SALISBURY he would—if the preparations for the defence of that place were not complete—have, to take up a position, determined to hold it to the last as he could retreat no further without uncovering the town. To take up a position and hold it obstinately to the last, early in the day, would be a mistake; as when beaten he would probably lose his power of causing any further delay to the enemy, and would therefore only half accomplish his task.
- (3) By destroying bridges over rivers, blocking roads, etc., cause checks to the enemy's advance.

As regards (1). To be justified in attacking, Colonel A must be able to show that the chances of success are very greatly in his favour; as were he beaten and driven back, he would have little or no chance of reorganising his force for further resistance during the day; thus the road to SALISBURY would be opened.

Now the force in front of Colonel A on the 3rd was numerically superior to that under his own command, and further it has strengthened its position by entrenching; so that to attack even with the reinforcements of four companies of mounted infantry expected at about 8 A.M. would be almost hopeless; unless, as is possible, the advance on this line is a feint and that the greater portion of the troops opposed to Colonel A have been withdrawn during the night to operate on the other line. But even in this case, Colonel A would not be right in attacking, as his duty would now lie more in the direction of assisting Colonel B than in driving back the weak detachment in front of him; for a small success on this road would exercise no effect in delaying the advance of the enemy's main columns on the other.

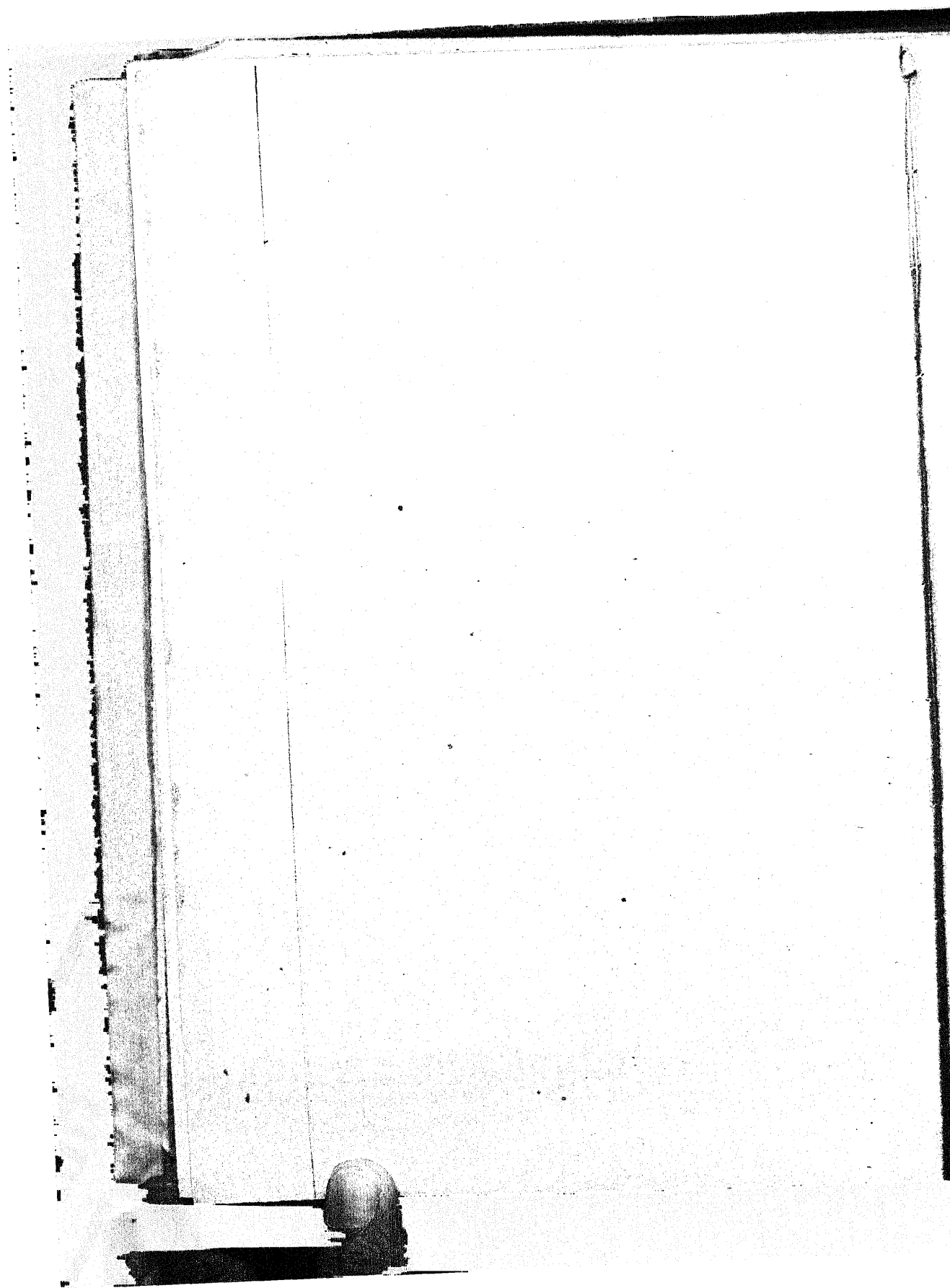
Colonel A, therefore, decides in favour of the measures detailed in (2) and (3).

The more positions he can take up the better. Therefore the first one should be as close to the enemy as possible. The Leyton position is, however, so close that in order to withdraw his force safely, he would have to commence his retirement at once, especially with the KENNET river just in rear of him, the crossing of which, although it is well provided with bridges, would be sure to cause some check to the rate of movement.

The next position is at LONG HILL. This is a much better one in every way; there is an obstacle in the shape of the KENNET—running right across the front—which is only fordable with difficulty; and the field of fire all round is good, although the village of Westcott some $1\frac{1}{2}$ miles in front affords some shelter. The spur 600 yards or so north of SHALFORD forms a buttress as it were on the left flank. The big wood west of LEYTON would conceal for some time movements directed against the left flank, but it is thick, and the ground inside steep in places; it could only be traversed by troops at a slow pace, thus gaining time for Colonel A. Retreat from it is easy, as there are several roads and the country is open. The brook in the RAYNE valley rises only about one mile west of Shalford, so is probably easily passable everywhere. Colonel A cannot decide thus early exactly how he will occupy the position, as the exact line of the enemy's advance on the morrow is still unknown to him. The Northern detachment may advance, *vid* WESTCOTT, or through EASTCOTT and STISTED. In the former case his position to cover the crossings at WESTCOTT would have to be about one mile further west than in the latter. Or again the enemy's main attack might work through wood west of LEYTON, directly threatening to turn his left. He must be prepared for all these eventualities, and so at first can only take up a position in readiness, and not deploy his force at once. It is to be noted that from LONG HILL a good view is to be obtained of the country north and east of WESTCOTT, so that the enemy's movements on WESTCOTT or EASTCOTT could not remain concealed, and would give him ample time to deploy on either section of the LONG HILL position.

As regards the destruction of the bridges over the KENNET, there are so many of them that time will not permit of all being broken down; besides above EASTCOTT the river is fordable, though with difficulty. The four bridges at MILL END might be destroyed so as to narrow the front of the enemy's advance, also the bridges at EASTCOTT, to retard his movements somewhat and give time to alter our dispositions if necessary. The bridges at MILL END must not, however, be destroyed too early, as our cavalry may find them useful in their retreat. They should be prepared for demolition in the first instance, the cavalry completing the work as they retire.

Having decided to compel the enemy to deploy in the first instance at the KENNET, Colonel A must get his detachment back to the LONG HILL as early as possible. (It is assumed that his main body passed the night in close cantonments in WESTCOTT)



TACTICAL SCHEME COMPETITION (JANUARY 1905).

SOLUTION BY "SLIM JIM."

The enemy has crossed the THAMES on January 3rd, in two columns at Marlow and Henley; and there can be little doubt but that he will continue his advance to-morrow (4th) on one or both lines.

Nothing is said about the total strength on either side, but from the fact that the Northern power has taken the initiative, whilst the Southern has decided on a defensive attitude, it may be assumed that the former has the greater strength immediately available, and that her preparations are in the more advanced state. Whether the preponderance in strength is sufficient to allow her to advance in two columns, each strong enough to hold its own against anything the Southern power may be able to bring against it, there is nothing to show. If it is not, it is probable that the advance on one or other of the lines is nothing more than a mere feint to make the Southerners divide their forces.

Colonel A must then be prepared for three contingencies—

(a) An advance of the enemy on the WESTCOTT-RIDING Road only.*

(b) An advance on the NEWBURY Road only.

(c) A simultaneous advance along both.

In the first case, Colonel A will have an overwhelming force against him; but it is possible that the detachment on the other road, feeling no pressure from the front, will be able to send him some assistance.

In the second case, when assured that there is no fear of an advance along the road he is watching, he could send, at all events, a part of his troops to help Colonel B (on the other road) if he hears from that officer that the troops at his disposal are inadequate to fulfil his task satisfactorily.

In the third case, he must be careful to work in concert with Colonel B, for were the detachment on one road to hold its ground whilst the other was driven back, the former would be in danger of being cut off. By working together, the two would have a chance of meeting somewhere further south, in front of SALISBURY, and making a final stand.

It is not, of course, necessary or possible that the retirement of the two detachments should be absolutely simultaneous, as they are some distance apart; but it would be dangerous for one to go on holding its ground very long after the other had retired. Colonel A must, therefore, get his cavalry out early in the morning, to reconnoitre towards the enemy, ascertain his strength and what further troops,

* After fighting ceased on the 3rd, the enemy was seen entrenching himself 1,000 yards N. of LEYTON. If it is the main body that is entrenching, it does not look as though he intended to advance on this line on the 4th. But possibly it is only his piquets and supports that are engaged in strengthening the outpost line.

TACTICAL SCHEME COMPETITION (OCTOBER 1905).

GENERAL IDEA.

References to map H.

A rising has taken place in an Asiatic country and the garrisons of many small stations have been isolated and besieged.

The railways and telegraphs have been interrupted throughout your district.

At FAIZABAD, 20 miles South of KUMB DARUN is your red force consisting of—

- 1 Regt. Cavalry.
- 2 Batteries, R.F.A.
- 1 Company Sappers and Miners.
- 6 Battalions Infantry.

FAIZABAD is a compact station, well suited for defence, and provided with ample transport for all your requirements.

At SAIDABAD, 25 miles north-west of GOLO PIR, is a garrison of 1 Infantry Battalion (at present about 600 strong), and 12 European families. They are besieged by a force of the enemy, reported by spies to consist of 1,500 men.

SPECIAL IDEA.

On the 1st November you receive the following instructions:—

"The main forces of the enemy, reported by spies to consist of 100,000 men, are besieging RAMITPUR, 150 miles east of SHAHDADPUR."

"With a view to taking the offensive against the enemy it has been decided to withdraw troops from all small stations and concentrate in the larger stations. You will arrange for the withdrawal from SAIDABAD and * * *."

REQUIRED—(1) Your orders for the despatch of a column to SAIDABAD.

On arrival at BHIT SHAH, 1½ miles south of SAYAD MURAD SHAH, at 9 A.M., on the 3rd November, you learn that a force of the enemy—weak in guns and cavalry—and consisting of 15,000 men, reached SHAHDADPUR from the east on the evening of the 2nd and are expected to halt there on the 3rd.

By personal reconnaissance, and officer's patrols, you ascertain that the enemy have occupied the villages of KHASKHELI, MUHAMMAD BARARO and MITHU SHAH and have piqueted the roads between them. No hostile patrols have been seen south of these villages.

REQUIRED.—(2) An appreciation of the situation.

(3) Your orders to carry out your decision.

United Service Institution of India.

PRIZE ESSAY GOLD MEDALLISTS.

- 1872...ROBERTS, Lieut.-Col. F. S., V.C., C.B., R. A.
 1873...COLQUHOUN, Capt. J. A. S., R.A.
 1874...COLQUHOUN, Capt. J. A. S., R.A.
 1879...ST. JOHN, Maj. O. B. C., R.E.
 1880...BARROW, Lieut. E. G., 7th Bengal Infantry.
 1882...MASON, Lieut. A. H., R.E.
 1883...COLLEN, Maj. E. H. H., S.C.
 1884...BARROW, Capt. E. G., 7th Bengal Infantry.
 1887...YATE, Lieut. A. C., 27th Baluch Infantry.
 1888...MAUDE, Capt. F. N., R.E.
 YOUNG, Maj. G. F., 24th P. I. (specially awarded a silver medal).
 1889...DUFF, Capt. B., 9th Bengal Infantry.
 1890...MAGUIRE, Capt. C. M., 2nd Cav., Hyderabad Contingent.
 1891...CARDEW, Lieut. F. G., 10th Bengal Lancers.
 1893...BULLOCK, Maj. G. M., Devonshire Regt.
 1894...CARTER, Capt. F. C., Northumberland Fusiliers.
 1895...NEVILLE, Lieut.-Col. J. P. C., 14th Bengal Lancers.
 1896...BINGLEY, Capt. A. H., 7th Bengal Infantry.
 1897...NAPIER, Capt. G. S. F., Oxfordshire L.I.
 1898...MULLALY, Maj. H., R.E.
 CLAY, Capt. C. H., 43rd Gurkha Rifles (specially awarded a silver medal).
 1899...NEVILLE, Col. J. P. C., S.C.
 1900...THUILLER, Capt. H. F., R.E.
 LUBBOCK, Capt. G., R.E. (specially awarded a silver medal).
 1901...RANKEN, Lieut.-Col. G. P., 46th Punjab Infantry.
 1902...TURNER, Capt. H. H. F., 2nd Bengal Lancers.
 1903...HAMILTON, Maj. W. G., D.S.O., Norfolk Regt.
 BOND, Capt. R. F. G., R.E. (specially awarded a silver medal).
 1904...MACMUNN, Maj. G. F., D.S.O., R.F.A.
 1905...COCKERILL, Maj. G. R., Royal Warwickshire Regt.

with outposts, say four companies—roughly on the line LEYTON—HUNTER'S HILL.) The outposts would have to hold their ground to cover the retirement of the main body if possible until the latter had reached LONG HILL, and then withdraw, *vid* WESTCOTT and EASTCOTT.

It is daylight at 7-30 A.M. The detachment may then leave WESTCOTT at 7-45 A.M., though the Sappers will have to get to work earlier. The detachment is probably only lightly supplied with baggage, but it must be sent ahead to Salisbury. It should leave by 7-30 A.M. under a small guard. It is not likely to be interfered with by the enemy, who is weak in Cavalry, but protection is required against the inhabitants, who are hostile.

As regards the dispositions made. If the enemy advances on EASTCOTT, the more easterly portion of the LONG HILL position will be held, the troops in the Westerly section being drawn towards the right.

If he advances on Westcott, the two wings will be drawn in on the centre, which is marked roughly by the RAYNE-WESTCOTT road.

Should the movement be up the river to turn the left, the guns must be moved to the spur North of SHALFORD, which must be more strongly held.

The four companies Mounted Infantry in rear of the centre can be moved rapidly towards the threatened direction wherever it may be.

In retiring, a flank guard will probably be necessary on the road to SALISBURY which runs close to STISTED, or any positions Col. A, takes up in rear would be turned at once by any hostile troops moving by this road.

The movement to the rear would be conducted as follows:—

First the Infantry, then the guns, then the Mounted and lastly the Cavalry.

OPERATION ORDERS.

By Colonel A, Commanding Detachment.

WESTCOTT, 7 P.M., 3rd January 1905.

(1). The hostile detachment encountered to-day has entrenched 1,000 × North of LEYTON. The country towards UXBRIDGE and GUILDFORD is reported clear of the enemy.

Colonel B's detachment on the NEWBURY-HENLEY road has been compelled to retire before superior forces, but still holds the South bank of the KENNET at NEWBURY. Reinforcements, consisting of four companies of Mounted Infantry, are being sent to us from SALISBURY, and are expected at RAYNE at 8-30 A.M. to-morrow.

(2). The detachment will without becoming obstinately engaged force the enemy to deploy to-morrow on the KENNET river.

(3). The 1st Battery, Field Artillery, the 1st Battalion, 10th Regiment, and 1 section from 1st Lancers will start in the order given from the road fork 50 × east of KILA at 7-45 A. M., and move to LONG HILL.

The Officer Commanding 1st Battery, Field Artillery, will select a position on LONG HILL covering the crossings of the KENNET river between EASTCOTT and the stone bridge $\frac{1}{2}$ mile west of WESTCOTT; the guns to remain in readiness under cover in rear. An alternative position to be selected on the spur $\frac{1}{4}$ mile North of SHALFORD. The Officer Commanding 1-10th Regiment will place one company on the spur $\frac{1}{4}$ mile North of SHALFORD, and one company just West of the road fork 350 yards North of the letter L in Long. The remainder of the Battalion will be assembled in rendezvous formation under cover $\frac{1}{2}$ mile North East of RAYNE.

(4). The 2nd Battalion, 8th Regiment, less four companies on outposts, will start at 8-45 A. M., from the road fork 200 x East of KILA, and will place one company in HOME FARM. The remaining three companies will be formed up under cover $\frac{1}{4}$ mile South of HOME FARM.

(5). The four companies Mounted Infantry coming up to reinforce will halt and await orders $\frac{1}{4}$ mile East of RAYNE.

(6). The 1st Company, Sappers and Miners, will leave Westcott at 5 A. M., and prepare the four bridges at MILL END, and the two at EASTCOTT for demolition, subsequently retiring to RAYNE, where they will halt and await orders.

(7). The outpost companies (four companies 2-8th Regiment under Major C.) will remain in their night positions till further orders. On receiving the order to retire they will withdraw *via* EASTCOTT and WESTCOTT, completing the destruction of the bridges, EASTCOTT on their way.

(8). The Cavalry will start from WESTCOTT at 7-45 A. M. and reconnoitre through LEYTON. Every endeavour is to be made to ascertain the strength of the enemy North of LEYTON, and if other hostile troops are on the road from MARLOW. A patrol is to be sent up the KENNET valley towards NEWBURY, and another *via* SHALFORD to open up communication with Colonel B's detachment. The responsibility for destroying the bridges at MILL END at the proper moment rests on the cavalry.

(9). The baggage will be formed up at 7-30 A.M. at the road fork 50 yards East of KILA, and proceed at once to SALISBURY *via* RAYNE and RIDING. The 1-10th Regiment and 2-8th Regiment will each detail one Non-Commissioned Officer and six men, and the 1st Battery Field Artillery, and the 1st Lancers three men each as baggage guard, the whole under the baggage officer.

(10). Reports will reach Colonel A from 8-30 A. M. onwards near the position selected for the guns on LONG HILL.

(Sd.) DIVISIONAL STAFF OFFICER.

Dictated to representatives of units in main body. Copies by Medical Officer, to Officer Commanding outposts, General Officer Commanding Salisbury, Officer Commanding reinforcing Mounted Infantry Companies, and Colonel B at NEWBURY.

MACGREGOR MEMORIAL SILVER MEDALLISTS.

- 1889...BELL, Col. M. S., V.C., R.E. (specially awarded a gold medal).
- 1890...YOUNGHUSBAND, Capt. F. E., K. Dn. Gds.
- 1891...SAWYER, Maj. H. A., 45th Sikhs.
RAMZAN KHAN, Havildar, 3rd Sikhs.
- 1892...VAUGHAN, Capt. H. B., 7th Bengal Infantry.
JAGGAT SINGH, Havildar, 19th P. I.
- 1893...BOWER, Capt. H., 17th Bengal Cavalry (specially awarded a gold medal).
FAZALDAD KHAN, Dafadar, 17th B. C.
- 1894...O'SULLIVAN, Maj. G. H. W., R.E.
MULL SINGH, Sowar, 6th B. C.
- 1895...DAVIES, Capt. H. R., Oxfordshire L. I.
GUNGA DYAL SINGH, Havildar, 2nd Rajputs.
- 1896...COCKERILL, Lieut. G. K., 28th Punjab Infantry.
GHULAM NABI, Sepoy, Q. O. Corps of Guides.
- 1897...SWAYNE, Capt. E. J. E., 16th Rajput Infantry.
SHAHZAD MIR, Dafadar, 11th B. L.
- 1898...WALKER, Capt. H. B., Duke of Cornwall's L. I.
ADAM KHAN, Havildar, Q. O. Corps of Guides.
- 1899...DOUGLAS, Capt. J. A., 2nd B. L.
MIHR DIN, Naik, Bengal S. and M.
- 1900...WINGATE, Capt. A. W. S., 14th B. L.
GURDIT SINGH, Havildar, 45th Sikhs.
- 1901...BURTON, Major E. B., 17th B. L.
SUNDER SINGH, Colr. Havildar, 31st Burma Infantry.
- 1902...RAY, Captain M. R. E., 7th Rajput Infantry.
TILBIR BHANDARI, Havildar, 9th Gurkha Rifles.
- 1903...MANIFOLD, Lieut.-Col. C. C., I.M.S.
GHULAM HUSSAIN, Lance-Dafadar, Q. O. Corps of Guides.
- 1904...FRASER, Captain L. D., R.E.A.
MOGHAL BAZ, Dafadar, Q. O. Corps of Guides.
- 1905...RENNICK, Major F., 40th Pathans (specially awarded a gold medal).
MADHO RAM, Havildar, 8th Gurkha Rifles.

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